United States Army

Aviation Digest

May/June 1994

Professional Bulletin 1-94-3 Distribution restriction. This publication approved for public release. Distribution unlimited.

Operation

Provide

Comfort

"Mission First—Safety Always"

52d Anniversary of Army Aviation

Aviation Digest

Professional Bulletin

1–94–3 • MAY/JUNE 1994

1 **Protect the Force,** MG Dave Robinson

3 **Views From Readers**

6 **"Mission First, Safety Always,"** CW5 Gerald D. Cartier and CPT Joseph Torrence

10 **What Is This Thing Called "Crew Coordination"?,** Dr. Dennis K. Leedom

14 **Threat and Countermeasure Factors in Risk Assessment,** CW3 Stephen L. Woods

16 **OFP & EID?,** SSG Robert L. Niebrugge

18 **AH–64A Apache Single–Engine Considerations,** MAJ Bloo Anderson

21 **Commander's Quarterly Safety Report,** CW3 Ronald B. Ritter Jr

24 **Battle Safety,** CW4 Dennis E. Dura

26 **Combat Stress—It Can Save Your Life or It Can Kill You,** CPT Michael D. Miller

28 **Effects of Family Stress on Military Aviator Flight Duty Performance,** 1LT Robert J. Antolick

31 **Human Error: Attitude Is No Accident,** CW4 (Retired) E. D. Kingsley

34 **What Is Army Standardization?,** CW5 William S. Turkoski

36 **Aviation Life Support Equipment...Who Needs It Anyway?,** CW2 Brett L. Carnes

39 **Aviation Personnel Notes: Aviation Branch Seeks Female Applicants for Warrant Officer Flight Training,** CW5 James R. Kale; **Aviation Warrant Officer Utility Helicopter Update,** CW5 Clifford L. Brown

42 **Aviation Logistics: Apache Maintenance Trainer for the Future: AET–A7,** CW4 Richard L. Smith and SFC Daniel Hernandez

45 **ATC Focus: Oklahoma National Guard Provides Antenna Maintenance,** Mr. Neal E. Johnson

46 **TEXCOM: Battle Labs Help Develop New Systems,** Dr. Henry C. Dubin

48 **Soldiers' Spotlight: CH–47 Flight Engineer Instructor Course—Above the Best,** SSG Jeffry T. Olson

50 **Aviation Restructure Initiative—Maintaining the Force,** Mr. Dennis Davenport

52 **The LTG Ellis D. Parker Aviation Unit Award,** CPT(P) John L. Trankovich Jr.

Back cover: U.S. Army Aviation UH–60 Black Hawk helicopters of the 12th Aviation Brigade fly in and out of the allied–controlled landing zone in Zakho, northern Iraq, providing food and relief supplies to the Kurdish population.

Cover: In the face of increasing demands brought about by world conflict and terrorism, U.S. Army Aviation units fly even tougher missions than ever before. The lead article, starting on page 6, describes the missions of one such unit—the 12th Aviation Brigade—which maintains the edge by its excellent **safety** record.

Major General Dave Robinson
Commander, U.S. Army Aviation Center

Major Steven R. Eisenhart
Executive Editor

Patricia S. Kitchell
Editor

By order of the Secretary of the Army:
GORDON R. SULLIVAN
General, U.S. Army
Chief of Staff

Official:

Milton H. Hamilton

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
06712

The *U.S. Army Aviation Digest* is an official Department of the Army professional bulletin (ISSN: 0004–2471) (USPS 415-350) published bimonthly under the supervision of the commander, U.S. Army Aviation Center. This publication presents professional information, but the views expressed herein are those of the author not the Department of Defense or its elements. The content does not necessarily reflect the official U.S. Army position and does not change or supersede any information unless otherwise specified. Photos are U.S. Army unless otherwise specified. Use of the masculine pronoun is intended to include both genders unless otherwise stated. Material may be reprinted provided credit is given to the *Aviation Digest* and to the author unless otherwise indicated. Publication uses recyclable paper.

This medium is approved for the dissemination of material designed to keep individuals within the Aviation Branch knowledgeable of current and emerging developments within their areas of expertise to enhance their professional development. Articles, photos, and items of interest on Army Aviation are invited. Direct communication is authorized by writing Editor, *U.S. Army Aviation Digest,* ATTN: ATZQ-PAO-AD, Fort Rucker, AL 36362-5042, or by calling either DSN 558-3619 or commercial 205-255-3619. Manuscripts returned only upon request.

Second class postage paid at Daleville, AL, and additional mailing offices.

Active Army, Army National Guard, and U.S. Army Reserve units receive distribution as outlined in DA Pamphlet 25-33. To complete DA Form 12-99-R, enter form number 12-05-E, block number 0014, and quantity. Also use DA Form 12-99-R for any change in distribution requirements. Army units submit the form to their publications control officer.

Personal copies of the *Digest* can be ordered from New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954.

POSTMASTER: Send address changes to U.S. Government Printing Office, Superintendent of Documents, ATTN: Chief, Mail List Branch, Mail Stop: SSOM, Washington, DC 20402-9373.

Major General Dave Robinson

Protect the Force

Most everyone I talk with wants to protect the force. We have gotten relatively sophisticated in assessing risk and understanding its management. **Protect the force** is much more than a safety slogan—it must be internalized by each of our aircrews and ground–support personnel. It is easy to become victim to complacency! The result is disaster and heartache.

Not too long ago, I received an eye–opening phone call. A senior aviation officer working in the Pentagon called me. He was relaying the concerns of a young company–grade officer who was about to deploy to the National Training Center (NTC), Fort Irwin, Calif. As most units do, his was leaning forward in the saddle to prepare for the challenges and rigors of this intense training opportunity. However, this young officer felt the train was moving too quickly; the training "Super Bowl" was approaching, and he did not feel ready. He had a nervous knot in his belly—was it time to call time–out and refocus?

With this information at hand, I decided to call the young officer's brigade commander and get his perspective. The unit is a top outfit with a solid record of performance. The brigade commander appreciated the call. After all, I was not trying to command the brigade but give him some information that he had a few players with pregame jitters. So he decided to take a step back and assess. This doesn't mean the unit was not proficient or couldn't get the job done.

The brigade commander gathered his chain of command and affirmed the "crawl, walk, and run" philosophy of our profession. In doing this, he transmitted his understanding of pregame jitters and confirmed the rotation as a "training opportunity" and not a "show–and–tell" operation. The team settled down, and its confidence increased. The brigade deployed to the NTC and had a superb rotation—accomplishing all training objectives without an incident or accident. Now the young company–grade officer may or may not have saved someone's life by raising his concerns. What is important here is the commander's response. Once aware, he acknowledged and addressed those concerns; that is what makes the difference—that is real leadership. We gladly accept the challenges and hazards of Army aviation, but we also must be smart enough to do everything possible to avoid risky behavior or unnecessary mistakes. When somebody calls time–out or says "I'm not ready," it is our obligation to listen and make the right decision. Remember the crawl, walk, run approach—it works! We empower our young leaders to make life–and–death decisions in combat; why shouldn't we listen to them in peacetime?

While soldiering itself is hazardous, the nature of our mission requires aviators to operate "in harm's way" on a regular basis in a notoriously unforgiving profession. Because of this, the Army aviation community has always had a heightened awareness of accident prevention and force protection. As we travel into the twenty–first century, protection of our resources, people, and equipment has never been so important. Commanders and leaders—from the Chief of Staff of the Army down to the lowest leadership levels—must become personally involved.

As Army aviation has grown and matured, so has our knowledge and ability to protect ourselves from the inherent risks of our dangerous business. In the 1950s— when Army aviation was striving to find its own identity—our accident rate was about 50 mishaps per 100,000 flight hours. This alarming rate caused the formation of the Army Accident Review Board, which later became the U.S. Army Safety Center, Fort Rucker, Ala. Army safety has come a long way since this humble beginning. Aviation safety has consistently blazed the trail for the Army.

Today, through the hard work and genuine concern of every soldier concerned with Army aviation, we are committed to driving the Class A aviation accident rate down to less than one accident per 100,000 flight hours. We are also committed to greatly reducing Class B and C mishaps. We cannot accept human–error mishaps—because such accidents sometimes result from poor decisions. Certain mishaps can result in lost lives and equipment.

While the numbers are getting smaller, we still suffer the same types of accidents as we did four decades ago. Human error dominates as the leading causal factor. In 1993, there was a total of 125 Class A through Class C accidents; of these, 67 percent were caused by human error. Human–error accidents are described in five categories: standards failure, training failure, leader

failure, individual failure, and support failure.

If standards do not exist or are not practical, then we have a standards failure. Everything we do in the Army should be done to a high, yet achievable, standard. If the standards exist, but the individual doesn't know about them or how to achieve them, then we have a training failure. This parallels a leadership failure in which the standards are known but not enforced. Now, we come to the tough part—if the standards are known but aren't followed, we have an individual failure. It is the most concealed form of human error because it is often executed without anyone else knowing—unless there is a mishap. Occasionally, something happens in the support side of the house that is human–induced; we must stamp these into oblivion.

Leaders must have their heads in the game at all times—assessing potential risk areas and working a management scheme. Effective leadership has the ability to anticipate; we can never let our guard down. Nothing we do in peacetime is worth the loss of one life.

Army aviation is still leading the way in safety and accident prevention. We are continually improving our knowledge and techniques of force protection with innovative programs. As you will read in Dr. Leedom's article (pages 10 through 13), the Army's own aviation crew–coordination training is now a reality. We are no longer dealing with crew coordination that lacks objective standards—nor are we talking in terms of how to coordinate at 35,000 feet. Instead, we are focused on the nap–of–the–earth environments using night–vision systems. We have integrated crew coordination into aviation training at both USAAVNC and in the field.

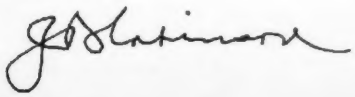
Risk management is rapidly rising to the forefront as the decision–making process. Now, we clearly understand that risk management is a leadership function that requires aggressive command emphasis. Today, instruction in all leadership courses (aviation officer, warrant officer, or noncommissioned officer) at Ft. Rucker includes how to implement the risk–management process. All aviation doctrine manuals now include guidance on risk–management implementation. You are operating with a serious handicap if you have not integrated risk management into the way you conduct operations.

The U.S. Army Safety Center is working diligently with the Aviation Branch to find methods to identify who or what may cause the next accident and take positive steps to reduce that risk. During my many visits to different aviation units over the past several years, I like to ask three questions: who is going to have the next accident in your unit, what kind of accident will it be, and what are you doing about it? A common answer is, "Sir, we're not going to have an accident." That's the unit most likely to have an accident. Why? Because the commander who says his unit will not have an accident is a commander who is comfortable with his situation and has stopped looking. When you get too comfortable as a commander or leader—you get nonchalant, and your head is not in the game.

Data from aviation accidents is now being analyzed in greater detail than ever before in an effort to provide the field with an automated risk–management program. This not only informs the mission planner of the level of risk of a selected course of action but also recommends countermeasures to eliminate or reduce the risk. Development of a "Next Accident Test" for aviators is nearing completion. When fielded, this test will assist both the commander and the individual by defining behavior that may contribute to the next accident. Our goal is to identify and change risky behavior. We closely review accident records of those individuals who are tentatively selected for instructor pilot qualification training. If this initiative is successful, it will be expanded to all advanced aviation training. I highly encourage commanders to execute this at the unit level.

The aviation commander clearly understands that force protection is a command function. We are very fortunate to have realized the need for a specialized staff officer to manage the administrative safety requirements and advise commanders on risk–assessment criteria and possible courses of action. The Aviation Safety Officer (ASO) is key in unit safety programs. The Safety Center has redefined the ASO responsibilities. No longer is the ASO course graduate just an accident investigator with limited knowledge of how to manage a safety program. Our new ASOs are arriving at units with skills in accident–prevention techniques that include essential risk–management skills, occupational health and safety knowledge, Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) compliance, and hands–on experience in hazard identification and countermeasures. Furthermore, we are completing work on a refresher course for ASOs to keep them up–to–date on current programs. The Aviation Branch Safety Office is revamping Army Regulation 385–95, *Army Aviation Accident Prevention*, to better clarify procedures for safety program management. Planned changes include full integration of risk management, clear delineation of safety program functions, and a restructuring of the Commander's Accident Prevention Plan to make it a truly useful tool. The goal is to provide you with a regulation that is user–friendly and works at all levels.

The present era is a challenging and demanding era for Army aviation. Changing missions abroad, the Army drawdown, budget constraints, and limited resources leave us no margin for error. Critical to contingency–force readiness is our ability to successfully implement the risk–management process and eliminate human–error accidents. Do not walk randomly into a situation that will control you—***you decide***! You decide whether you are ready for a crawl, walk, or run operation—just as the young company–grade officer did in the beginning of this article. Our ultimate test is victory in battle; and for this to occur, we must protect the force, remembering that soldiers are our most precious asset—taking care of them is a solemn obligation.



Feedback on warrant officer policy

The following comments are addressed to the article, *Aviation Warrant Officer Fixed–Wing Career Update*, page 43, January/February 1994, ***Aviation Digest,*** concerning the changes in the acquisition, assignment, and utilization of aviation warrant officer (AWO) fixed–wing aviators.

I am convinced that the U.S. Army must implement an approach to fixed–wing aviation that ensures adequate numbers of trained, competent aviators are available to both operational support airlift (OSA) and special electronics mission aircraft (SEMA) assignments.

The changes outlined in the article are certainly the first step in correcting a problem that has plagued Army fixed–wing career progression since the mid–1970s—that is, too many senior warrant officers. However, there appear to be inconsistencies in three specific areas of the plan.

The plan does not permit the acquisition of warrant officer 1s (WOls) into fixed–wing. The Army plan concludes that WOls are capable of competing for and completing training in advanced rotary–wing aircraft—such as the AH–64, CH–47, and the UH–60—but not for fixed–wing aircraft. The plan limits fixed–wing training to chief warrant officer 2s (CW2s) who are not qualified in an advanced aircraft. This implies that fixed–wing/SEMA trainees will be selected from a population of CW2s that were nonselects for competitive positions in advanced rotary–wing aircraft. The WO1 restriction seems inconsistent because second lieutenants are routinely selected for fixed–wing training; these individuals receive the same level of training as WOls.

The article states that ". . . an equitable outside continental United States to CONUS rotation base for fixed–wing warrants of all ranks. Some fixed–wing aviators may find themselves rotating into aerial exploitation battalions . . . ." This statement suggests that the primary thrust of fixed–wing training is to support the OSA Command requirements. This is wrong! This statement exacerbates an already difficult situation in which Army intelligence trains SEMA warrant officers, gives them valuable operational skills, and then loses them to an OSA assignment. Army intelligence has a well–validated, significant requirement for competitive, capable, SEMA–qualified warrant officers. SEMA pilots require special skills that are developed through formal training at Fort Huachuca, Ariz., and recurrent operational assignments in intelligence battalions. Rotations between OSA and SEMA assignments are counterproductive.

The article does not address the high attrition rate of senior fixed–wing aviators. Also, no method of slowing attrition is addressed.

I recommend the following as additional solutions:

- ***Allow WO1s to compete for fixed–wing as they do for advanced rotary–wing aircraft.*** This will ensure that fixed–wing has its fair share of top performers.
- ***SEMA fixed–wing aviators must have a specific military occupational specialty (MOS) designation and be assigned only to aerial exploitation battalions and other aerial intelligence units for their entire careers.***
- ***Establish a floor for SEMA fixed–wing promotions to CW5.*** This will slow the attrition rate of experienced WOs while the new force structure is implemented. This would ensure a safe and professional development of a new fixed–wing aviator base. There is an inordinately low selection rate for CW5 among fixed–wing SEMA aviators. This consistently low selection rate cannot be attributed to individual performance alone. It appears that there is a difference between what field military intelligence (MI) commanders consider top performers and what promotion boards consider top performers.

With the Aviation Restructure Initiative, Army fixed–wing is at a critical point in its history. Steps must be taken to ensure that the fixed–wing force will support the tactical needs of commanders. A coherent fixed–wing policy must be set that adequately addresses the needs of Army tactical intelligence.

LTC Michael J. Gaffney
Commander
15th Military Intelligence Battalion (AE)
Fort Hood, TX 76544–5085

American Military University offers courses

American Military University is an independent university founded in June 1991 in the Commonwealth of Virginia. The purpose of the University is to provide graduate education in military studies. The University's primary audience is the U.S. military, but anyone meeting the admission requirements is eligible for study at AMU. As of January 1994, the university has grown to an enrollment of 300 students, a faculty of 68 (41 of whom hold the doctorate), and an offering of more than 100 courses.

All instruction at AMU is conducted through distance education. Direct communication between the student and professor is accomplished by telephone, correspondence, computer, or other means. The student is required to "meet" with the professor at least four times during the semester, usually by telephone. Professors are required to establish "office hours" each week to allow students the opportunity to communicate directly with them—thus contributing to a close one–on–one mentoring approach to the learning process.

Students are located throughout the United States and abroad and are generally not able to attend standard classroom instruction. The university provides each student with required material for directed self–study and research; the student may also use local libraries and research facilities for supplemental material.

Each course has a specific weekly assignment and goal. Students study at their own pace but must complete all assigned requirements within the 15–week semester time period. Although each course contains different requirements, general minimum course requirements include 1,200 to 1,500 pages of required reading, a research project or paper, and a proctored final examination.

The most basic definition of the word "faculty" is "teaching body." AMU expands this definition to include maximum personal attention—a one–on–one mentoring environment, and a special partnership between the student and professor. The faculty at AMU is composed of professional educators, military historians, and authors. They have dedicated their lives to the study and teaching of the military arts and sciences; they now offer their capabilities to students of warfare, regardless of the student's location in the world. AMU combines its distinguished faculty with a broad curriculum and high academic standards to form a unique institution of higher learning.

Students may specialize in one of four areas of study—land warfare, naval warfare, air warfare, or defense management. These areas study are designed to allow the student to focus academic efforts in the specific area of interest. About 35 courses are available each semester to support the four areas of study. Eventually, course selection will comprise the most extensive array of military courses available anywhere in the country.

As a new institution of graduate education, AMU is required to operate for a two–year period before it is eligible to receive accreditation. The university is now in its fourth semester of classes and will complete its two–year mandatory period by January 1995. The university is also in the process of completing all the required steps in the process for permission to grant degrees in the Commonwealth of Virginia. For military personnel interested in taking courses at AMU, the rules governing veterans' benefits and federal tuition reimbursement programs prohibit access to these funds until the institution is accredited. Until that time, students will have to bear the full cost of tuition and books.

The university was founded by retired U.S. Marine Corps Major James P. Etter. The Dean of the Graduate School is retired Army Colonel John E. Jessup, PhD. Both Mr. Etter and Dr. Jessup believe that professional soldiers have always understood war more fully than others because it has always been the soldier who must engage in war's most bitter parts. Most of the great military leaders of the past—such as Frederick the Great, Rommel, Patton, Wavell, and a host of others—were avid readers and students of their craft. Many concluded that a soldier could never really complete his or her education—not only because of the immensity of the subject, but also because history is constantly changing. Thus, learning is a never–ending, individual process. In addition to military professionals, many nonmilitary students have enrolled in AMU programs both as a means of completing their graduate studies and out of a desire to better understand the military and its relationship to our society and the world.

A catalog and an admissions application package are available for $5.00 from the Director of Admissions, American Military University, 9285 Corporate Circle, Manassas, VA 22110. Or for more information, call 703–330–5398 or (fax) 703–330–5109.

Enrollment Growth
- Winter 1993–18.
- Summer 1993–57.
- Fall 1993–156.
- Winter 1994–275.
- As of Feb 1994–311

Number of Courses Offered
- January 1993 (Winter)–13.
- May 1993 (Summer)–27.
- September 1993 (Fall)–35.
- January 1994 (Winter)—35.
- May 1994 (Summer)–33.

Catalog Requests
3,000 since October 1992.

Student Profile (Winter 1994)
- U.S. Army 26.
- U.S. Navy 18.
- U.S. Marine Corps 38.
- U.S. Air Force 32.
- National Guard 50.
- Retired Military 23.
- Civilian 119.
- Foreign 5.

Students in Degree Programs
- Land warfare—96.
- Naval warfare—12.
- Air warfare—19.
- Defense management—10.
- Undecided—174.

Faculty
66 members, 44 of whom hold PhDs.

Most Popular Courses
- RC7OO–*The Study and Use of Military History.*
- LW5OO–*American Military Experience to 1900.*
- LW503–*The American Revolution.*
- LW518–*History of Guerrilla Warfare.*
- LW519–*The Korean War*
- NW514–*Naval Power and Strategy.*
- AW503–*Air War in Korea.*

American Civil War courses

AMU announces the inaugural block of graduate courses concentrating on the American Civil War. Scheduled to be offered during fall semester, which begins in August 1994, are—
- *U.S. Grant: Study in Leadership* (Professor Edward Coggins)
- *Prelude to War: Antebellum America* (Dr. James Abrahamson)
- *Naval History of the Civil War* (Professor Robert Schneller).

Five other courses that focus on the Civil War are under development. These courses will thoroughly cover all the major campaigns and battles of the War Between the States and will commence in January 1995. Course materials will include the best books and videotapes available on the Civil War. Dr. Frank Vandiver—author of ***Mighty Stonewall***, ***Their Tattered Flags***, and other acclaimed works on the Civil War—is a member of the AMU Academic Board, which will assist in the development of this 10–course block.

AMU also continues to offer one of the most comprehensive ranges of graduate level courses in Military Studies available anywhere. Current courses address—
- Ancient and medieval wafare.
- American Revolution.
- Boer War.
- World War I.
- World War II.
- Vietnam.
- Afghanistan.
- U.N. peacekeeping operations.
- Military law.
- Leadership.
- Military logistics.

Courses cover the gamut of the military arts and sciences—on land, at sea, and in the air. At AMU, students study with some of the most noted authorities in the field—educators, authors, and civilian and military leaders. The university catalog contains a complete list of all AMU courses and faculty.

Otter–Caribou reunion

The Army Otter–Caribou Asssociation will have its ninth annual reunion 7–11 September in Orlando, Fla. Former Army Otter or Caribou aviation personnel should contact the association at 1–800–626–8194 for membership information.

The association was organized in 1985 and approved by the IRS as a nonprofit veteran organization under IRS Code 501(c)(19).

Air Corps reunion

Former U.S. Air Corps cadets and instructors who trained or taught in the 1940s at Parks College or one of its sites in Sikeston or Cape Girardeau, Mo., Jackson, Miss., or Tuscaloosa, Ala., will have a reunion 31 September–2 October. The event will be on the Parks campus in Cahokia, Ill., near downtown St. Louis, Mo. For more information, contact Nita S. Browning, Public Relations Director, Parks College of St. Louis University, Cahokia, IL 62206—or call 618–337–7575, extension 206.

Corrections

The following corrections are noted for the March/April issue of the *Digest*:

The meaning for the acronym J–STARS in the article, *Simulation—Preparation for Victory*, on page 1, should have read "Joint Surveillance Target Attack Radar System."

The location for the author in the article, *Army National Guard Assumes the OSA Mission*, on page 29, should have been "Davison Army Air Field," rather than "Davidson Army Airfield."

"Mission First, Safety Always"

Colonel Thomas M. Hayes, Commanding
12th Aviation Brigade, V Corps, U.S. Army, Europe

CW5 Gerald D. Cartier
Brigade Safety Officer

Captain Joseph Torrence
Assistant S3

This article was written and approved before the tragic incident over northern Iraq, in support of Operation Provide Comfort, on 14 April 1994. It is dedicated, therefore, to those proud men and women who perished on this mission trying to help others.

"Mission First, Safety Always," in the 12th Brigade, these are the words we live by and fly by.

Over the course of 1993, the brigade flew 17,412 hours without a recordable class A, B, or C flight–related mishap, fatality, or injury. These hours represent the combined effort of 242 combat–ready aviators flying 103 assigned aircraft for a forward–deployed aviation brigade.

The turmoil in Europe has done little to diminish the training pace or the mission profile of the 12th Aviation Brigade. The brigade provides lift aviation and target acquisition support to the only remaining Corps in the European theater. Few units have been so tested with such sensitive missions and performed so professionally.

MISSIONS/SUPPORT TO V CORPS

Daily missions include: command aviation and fixed-wing support of Headquarters, V Corps, and its nine major subordinate commands; direct medium lift helicopter support to the Corps two divisions and its Corps support command; assault helicopter support for both divisions and the Corps long–range surveillance unit; and target acquisition support for the Corps artillery command and three Corps–level, AH–64 Apache attack helicopter battalions.

SENSITIVE MISSIONS/SUPPORT TO CORPS/ MACOMS

Besides normal training support provided to the Corps, the brigade has accomplished numerous sensitive missions for the Corps and major Army commands (MACOMs). In addition, we have closed two major Army airfields in Europe, which required re–stationing a UH–60 Black Hawk company, a CH–47 Chinook company, and an air traffic services (ATS) battalion.

We completed the final drawdown of the Corps premier aviation combat multiplier (Task Force Warrior). All tasks were completed on schedule and without incident, a testament to this organization's professionalism and safety prowess.

The combination of these events, coupled with a positive proactive safety attitude, resulted in a proven and ready brigade unrivaled in accomplishment.

OPERATION RESTORE HOPE

Task Force 5–158, 12th Aviation Brigade, was V Corps aviation contribution to Operation Restore Hope, the United Nations relief effort in Somalia. On Christmas Day, the last elements of an advanced party consisting of 15 UH–60s, 38 vehicles and ground support equipment, and 160 personnel deployed to Mogadishu, Somalia, via U.S. Air Force C–5 Galaxy and C–141 Starlifter aircraft.

By the end of December, a 700–man, 46–aircraft (30 UH–60s and 16 CH–47s), 370–vehicle task force had closed on Somalia. This contingency deployment demonstrated the brigade's ability to deploy rapidly by air, rail, and sea with very little notice and all safely.

Besides the advanced party's strategic air deployment, the brigade ran three international rail head operations from Germany to a port in Italy and self–deployed 31 aircraft to Italy. These 31 aircraft plus 332 various vehicles and ground support equipment were loaded and transported via ship from Italy to Somalia, all without incident.

As an indicator of the brigade's safety attitude, it should be noted that the brigade safety officer was one

of the first two soldiers sent to the port before any aircraft or vehicles to ensure a safe and smooth transition during these very dangerous operations. All personnel, aircraft, vehicles, and ground support equipment eventually were returned to Germany without the brigade recording a single aviation–related mishap or personnel incident.

OUT OF THEATER MISSIONS

During the year, 12th Aviation Brigade aviation assets found themselves heavily involved in the evacuation of three highly sensitive missions, all out of theater.

The Beirut Air Bridge

The first mission entails a detachment of four UH–60 aircraft and crews with support teams. This detachment was forward deployed to the island of Cyprus in support of the Beirut Air Bridge (BAB), to provide life line support and on–call emergency evacuation to the United States Embassy in Beirut, Lebanon. Over the course of the year, some 797 accident and incident free hours were flown in support of the BAB.

The mission profile for this operation involves some of the most demanding and strenuous flight activities we can ask U.S. Army aviators to perform. Night vision goggles (NVG) overwater flight is the required mission profile. An agressive overwater training program, to include drownproofing, "dunker," helicopter emergency escape devices (HEEDs) bottle, life raft, aviation life support equipment (ALSE), and NVG deck landings on U.S. Navy ships, calls for constant vigilance and a superior safety conciousness.

With crews rotating every 60 days, the training tempo is continuous and standards are reinforced daily. This mission continues to be accomplished professionally and safely to this day.

Operation Provide Comfort

Our second mission takes our soldiers to the very dangerous high mountains of eastern Turkey and northern Iraq, in support of Operation Provide Comfort (OPC). Six UH–60 aircraft and crews with support teams are deployed to provide aerial support to the European Command Combined Task force in Turkey. Operating well beyond established lines of communication in a hostile environment is the hallmark of this vital mission.

Deployed aircrews and support personnel are entitled to Imminent Danger Pay and are awarded a combat patch upon completion of this rigorous mission. Adverse weather, to include unpredictable winds, heat, fog, and heavy snow, coupled with a high–density altitude (DA), test the abilities of our crews during every flight.

Daily missions range from VIP support to air movement operations. Over 2,000 accident and incident free hours were logged last year in support of this very difficult and demanding mission.

"Safety First" is not just a catchy phrase for these soldiers, but a way of life. Our OPC flight crews were credited, on three separate occasions, with the rescue of Allied jet fighter pilots who were forced to eject over hostile territory in support of this mission. Having superbly trained, professional crews and support personnel (rotated every 60 days) is critical to the continued success of operation provide comfort and cannot be underscored.

Allied Command, Europe, Mobile Force (Land)

The third, and possibly the most difficult mission, because of the varied training requirements and multinational composition, is our mission to provide the Allied Command, Europe, Mobile Force (Land) (AMF (L)) aviation component.

Deploying with an international task force comprised of North Atlantic Treaty Organization (NATO) ground forces, this component is a ready and trained element of the NATO contingency force. Five UH–1 crews and support personnel are dedicated to this demanding requirement. Arctic, overwater, and mountain training, to name a few, keep these always on–call soldiers ready, willing, and able to respond when needed.

During the past year, this unit was deployed three different times to conduct training with the AMF (L). With the ability to rapidly deploy by air, sea, and rail, this unit is one of the most capable and ready aviation assets in Europe. Previously, this important mission rotated among units in theater. Now the 12th Aviation Brigade is the only unit capable of meeting the exacting demands of this mission.

Last year alone, Allied forces in Denmark, Italy, and Turkey had the chance to see how some of the U.S. Army's best trained and safety conscious soldiers provide responsive and flexible aviation support to the AMF (L) ground forces. Operating under demanding field conditions, all missions were conducted without accident or incident.

In addition, on one occasion a flight crew of ours was credited with saving the life of a Belgian helicopter pilot and three passengers who had crashed at one of the AMF (L) field sites. Quick thinking on the part of our personnel helped extricate the pilot and passengers from the wreckage before it was fully engulfed in flames. These accomplishments further define the excellence, dedication, and safety awareness of the aircrews within the 12th Aviation Brigade.

OTHER SUPPORT

Combat Maneuver Training Center

Besides the heavy commitment for our out–of–sector missions, the brigade is able, and more than willing, to provide support as needed and required. OH–58D Kiowa Warrior and CH–47D support for unit rotations at the Combat Maneuver Training Center at Hohenfels and range density at Grafenwoehr are common taskings.The overall expertise with which these missions are carried out earns accolades from all supported units that have had the chance to work with these combat aviation professionals.

On a recurring basis, our CH–47 crews are on standby to provide fire bucket support to suppress range fires and, if needed, to supplement host nation forest firefighting efforts.

Perfecting the brigade's ability to covertly insert long-range surveillance units (LRSUs) with UH–60s and CH–47s, outfitted as Fat Cows, providing fuel, has extended V Corps intelligence capability immensely. This capability provides the command with a real world combat multiplier.

Operation Provide Promise

Over the year, our fixed–wing detachment set the standard for professionalism. On a daily basis, it is called on to fly an assortment of missions all over the European continent.

Its support to Operation Provide Promise, the United Nations contingent in Croatia, took it into a hostile fire area twice a week for most of the year. Landing at sites such as Zagreb, Croatia, and Split, Bosnia–Herzegovina, provided a challenge each time because of the difficulty associated with diplomatic clearances, less than ideal ATC facilities, and the constant threat of hostile fire.

Operation Able Sentry

Early last summer a tasking to provide fixed–wing support for Operation Able Sentry, another United Nations peace–keeping mission located in Macedonia, was received. As expected, assets from the 12th Aviation Brigade answered the call.

The high mountains surrounding Skopje, Macedonia, our designated airport, provided a challenge. Unpredictable weather, coupled with a massive language problem and less than desirable navigational aids, helped showcase our flight detachment's aviators' true professionalism.

The safety of our passengers and aircraft were always the overriding factor and primary concern on each mission. In spite of these challenges, all missions were completed safely.

Air traffic services

Providing the best possible air traffic services (ATS) to 14 fixed airfields in Germany, and tactical ATC support anywhere it is needed, is what our ATS battalion prides itself on. Deployments to tactical field training sites or real world requirements such as ATC services in Somalia or special ATC for visiting VIPs such as the U.S. Secretary of Defense are always impeccably orchestrated.

The overall professional attitude and ability to adapt to an ever–changing scenario has earned our controllers the respect of the entire European aviation community. With 522,774 safe movements and 14,773 ground controlled approaches (GCAs) accomplished last year, and no controller-related incidents reported, our ATS battalion is justifiably proud.

Grafenwoehr Training Area

From mid–August through mid–September, all units took part in a brigade–level gunnery range density at Grafenwoehr Training Area (GTA). All soldiers available qualified with their respective individual weapons. In addition, M60, M9, and M16 unit and individual competitions were held. Part of this density was devoted to annual door gunner qualifications for UH–1, UH–60, and CH–47 aircraft assigned to the brigade.

A gate type, GO/NO–GO, crew training system was used to evaluate each gunner before actually going to the aircraft for the live fire portion. At the same time, we were able to validate the door gunner tables at GTA. Because of our BAS, OPC, and AMF (L) mission requirements, door gunnery qualification is a requisite skill needed before assignment on one of the rotations.

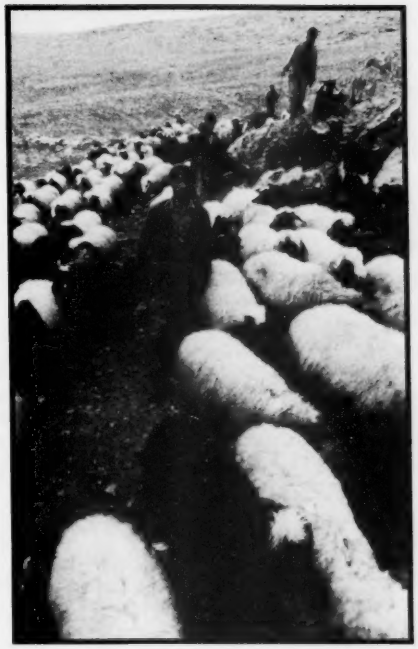
CONCLUSION

The 12th Aviation Brigade has distinguished itself as an outstanding aviation unit, dedicated to using safety as a force protector and combat multiplier. Carrying on a tradition started with the formation of the unit, the brigade has demonstrated its ability to accomplish any mission, anywhere, anytime safely.

Few units have been tested with such a diverse array of sensitive missions and performed as professionally. Our Mission Essential Task List is tested frequently. We prove, on a daily basis, that we can and will accomplish our mission safely.

The safety record of this brigade is testimony to the capabilities and professionalism of each member of the unit. The 12th Aviation Brigade units exemplify excellence in U.S. Army Aviation and clearly set the standard for other units world.

"Mission First, Safety Always."



Everyday scenes of Kurdish people living in the U.N.–designated safe zone of northern Iraq and serviced by Operation Provide Comfort. (Camera imagery by Staff Sergeants Theodore J. Koniares and Efrain Gonzalez)

What is This Thing Called "Crew Coordination"?

Dr. Dennis K. Leedom
Principal Scientist
U.S. Army Research Institute
Rotary-Wing Research Unit
Fort Rucker, Alabama

This article provides you with some background information on the Army's current training program on crew coordination—How it was developed, how it has been shown to be effective, and whether it is the best approach.

Ever since the publication of TC–210, ***Aircrew Training Program Commander's Guide to Individual and Crew Training***, March 1992, we've all known that something called "crew coordination" is important to Army aviators. According to the ***Commander's Guide***, crew coordination is "a set of principles, attitudes, procedures, and techniques which transforms individuals into an effective crew."

But are we just talking "motherhood" and "apple pie" when we speak of crew coordination? Or is it something that will actually contribute to mission performance and flight safety? Some aviators believe that adherence to good crew coordination principles will save their life someday. Other aviators remain unconvinced, seeing the current emphasis on crew coordination as just another administrative burden. So, who is right? The answer depends, in large part, on how the training is implemented.

A Little History...

In early 1990, the Army became increasingly concerned over the possibility that crew error was a significant contributor to aviation accidents. A review of aviation accidents from 1984 to 1989 suggested that crew error was implicated in accidents that had cost the Army 147 lives and over $292 million in aviation resources. A year later, a review of aviation accidents occurring during Desert Shield/Desert Storm reinforced the belief that poor crew coordination was a contributing factor to crew error accidents. Thus motivated, the U.S. Army Aviation Center (USAAVNC) established a "tiger team" of aviation specialists and psychologists at Fort Rucker to develop a set of fixes for this problem. By early 1992, a number of solutions began to emerge from this collaborative effort.

Recognizing the need to introduce the concept of crew coordination in a "top-down" manner, the USAAVNC team set about to make appropriate changes to the ***Commander's Guide***. Thus, the March 1992 revision to TC 1–210 clearly emphasized the requirement for crew coordination training in the unit's overall training program. In addition, this same revision highlighted important aspects of crew coordination identified from initial research conducted by the U.S. Army Research Institute (USARI), e.g., positive communication, direct assistance.

At the same time, the revised version of TC 1–210 instituted a policy of mandated battle rostering for Army aviation units. Battle rostering was defined as the designation of two or more individual aviators to perform as a crew during both peacetime training and wartime deployment. All FAC–1 and FAC–2 aviators were to be battle rostered. Finally, TC 1–210 specified that crew readiness would be measured against a new set of Crew Readiness Level (CRL) designations. The CRL–1 and CRL–2 designations track battle rostered crew training status independently of individual aviator training status.

Attention was turned next to making appropriate revisions to the individual *Aircrew Training Manuals* for each aircraft type. Here, specific guidance was developed on the crew coordination actions essential to each flight task. For many flight tasks, the task description now specifies the coordination actions required of the pilot on the controls, and those required of other crew– members.

A New Training Approach...

As the various *Aircrew Training Manuals* were being revised in 1992, the USAAVNC team realized that a new training system was needed to assist aviation units in transitioning their aviators to the new flight task standards. While some training materials were already available from the commercial airline industry, previous attempts to adapt these materials to Army aviation had met with limited success. Specifically, many aviators complained that the existing training packages for crew coordination lacked objective standards for measuring crew performance. In addition, it was argued that training oriented toward cockpit coordination at 35,000 feet was not necessarily suited to the Army's night, nap of the earth environment.

In response, USARI expanded its crew coordination research[1] to include the development of a performance-based training and evaluation program for Army aviation units. A unique feature of this training and evaluation program is that it defines crew coordination in specific, operationally relevant terms. After some amount of debate, the USAAVNC team agreed that crew coordination would be evaluated in terms of 13 key dimensions. It is useful to think of these dimensions, shown in the table, as similar to the "basic qualities" aviators might remember from basic flight training. Each "basic quality" is not so much important in itself as it is an important contributor to accomplishing the specific flight tasks essential for

Table
Crew Coordination Evaluation Dimensions

Evaluation Dimension	Description
Establish and maintain flight team leadership and crew climate	Performance anchors focus on leadership style, professional respect, the resolution of disagreements, and team member attitudes.
Premission planning and rehearsal accomplished	Performance anchors focus on premission flight planning, rehearsal of critical events, and in-flight replanning and rehearsal.
Selection of appropriate decision making techniques	Performance anchors focus on information gathering and use of team deliberation under conditions of either high or moderate/low time stress.
Prioritize actions and distribute workload	Performance anchors focus on mission task prioritization and cockpit workload distribution.
Management of unexpected events	Performance anchors focus on team preparation and composure, and on team resource management.
Statements and directives are clear, timely, relevant, complete, and verified	Performance anchors focus on the adequacy, timeliness, clarity, standardization, and acknowledgement of callouts by team members.
Maintenance of mission situational awareness	Performance anchors focus on how team members keep each other informed of critical events and factors affecting situational awareness (e.g., fatigue, anger).
Decisions and actions communicated and acknowledged	Performance anchors focus on manner in which decisions and actions are communicated, clarified, and acknowledged by team members.
Supporting information and actions sought from crew	Performance anchors focus on solicitation of information and assistance from other team members.
Crewmember actions mutually cross monitored	Performance anchors focus on scanning for team member errors and the use of the two-challenge rule for overcoming cognitive inertia.
Supporting information and actions offered by crew	Performance anchors focus on the anticipation and offering of required information and assistance to other team members.
Advocacy and assertion practiced	Performance anchors focus on rank/experience intimidation and the assertiveness of junior team members.
Crew-level afteraction reviews accomplished	Performance anchors focus on the self-critique and improvement of team performance after each mission.

Notes: [1]Research during this entire period was supported with technical assistance from a contractor team comprised of Dynamics Research Corporation and ANACAPA Sciences, Inc.

[2]For those aircraft without an associated flight simulator or combat mission simulator, demonstration flights are conducted either in–flight or in the UH-1 Iroquois instrument trainer.

[3]Battle rostered crews, previously formed by their unit, were required to have flown at least once as a battle rostered crew within 60 days preceding the test.

mission effectiveness and flight safety.

USARI then took these dimensions and produced a training and evaluation program for Army aviation units. Classroom instruction and small group exercises led by unit instructor pilots (IPs) and unit trainers (UTs) first provide aviators with an introduction to the importance of each dimension and the factors necessary for achieving each standard. This instruction is followed by several sessions in the flight simulator[2] in which unit IPs can demonstrate and evaluate actual behaviors in a tactical mission setting. An essential step in this whole process is the video recording of crew behaviors during the training missions. During the mission debriefings with the IPs, crew–members have the opportunity to observe themselves and note their strengths and weaknesses. Throughout the entire training and evaluation process, emphasis is placed on teaching crew coordination in a context that is operationally relevant to each individual aviator.

The Proof is in the Pudding...

During 1992 and 1993, USARI conducted two field studies to assess the validity and impact of the new training. Of biggest concern to the Aviation Center were the questions, "Would Army aviators accept this new training?" and "Would the training produce measurable improvements in mission performance and flight safety?" The first study, conducted with UH–60 Black Hawk crews from Fort Campbell, Ky., found that unit aviators and IPs enthusiastically endorsed the new training—despite the fact that some aviators had leave cancelled to take part in the test! In a second study with AH-64 Apache crews at Fort Rucker, reactions were much the same. Typical comments included:

"I'm 100 percent for this program. It will save lives and aircraft. It may well save my life someday."

"I thought some of the material was common sense, but it is needed to institutionalize common practices and define techniques. It makes everybody speak up and fly as a crew."

"I sequence and time activities better. This course got me out of some bad habits."

"This program made me think more, even with crewmembers that I have flown with before."

But what about performance? Here, the evidence was just as strong that the new training program had a positive effect on both mission effectiveness and flight safety. In the study with UH-60 crews conducting simulated troop insertion and slingload missions, IP evaluators found that—

•Crews conducted better mission planning with shorter planning and rehearsal cycles.

• Crews practiced better communication patterns in the cockpit.

• Crews managed critical flight tasks more efficiently, using the entire crew.

• Crews exhibited significantly fewer errors of the type frequently implicated in previous aviation accidents (e.g., violation of altitude restrictions, poor transition to instrument meteorological conditions flight, failure to detect system malfunctions in a timely manner, failure to maintain obstacle clearance).

•Crews navigated more accurately with fewer course and timing deviations.

•Crews more successfully avoided detection and engagement by enemy air defenses.

Comparable results were found in the USARI study of AH-64 crews a year later. In this study of crews conducting simulated attack missions, IP evaluators found that—

• Crews managed cockpit workload better with improved communication patterns.

•Crews reacted better to unexpected events.

•Crews navigated more accurately with fewer obstacle or ground strikes.

•Crews engaged more targets and achieved more successful target kills.

•Crews more successfully avoided detection and engagement by enemy air defenses.

Based on earlier validation findings obtained in 1992, the training and evaluation program was approved by the U.S. Army Chief of Staff (CSA) for Armywide fielding. Interestingly, the CSA's approval of funding for this training came the same week that he was asked by the President to make significant cuts in the Army's FY93 budget. By mid-1993, USAAVNC established a Crew Coordination Training Team to implement the training at each aviation simulation training site worldwide. Accompanying this action, each of the Army's visual flight simulators throughout the world were outfitted with video recording equipment to support the new training. By September, 1993, the USAAVNC training team had begun the 2–year installation cycle by installing the training program at Fort Campbell.Other sites are following in rapid succession. To date, the USAAVNC team has experienced positive aviator reactions at each location.They also have observed that crew performance consistently improves over the sequence of three training missions conducted in the flight simulator.

Is Battle Rostering Needed?

As USAAVNC began to field the new training and evaluation program, questions were raised about the continued necessity of battle rostering. Since its practice was mandated by TC 1–210 in March 1992, operational units were beginning to complain of the significant administrative burden imposed by this crew pairing requirement. In addition, some anecdotal evidence was beginning to surface that suggestedprolonged battle rostering was inducing complacency and overconfidence in some cockpits, two contributors to aviation accidents. So, in early 1992, USARI was asked to investigate this issue. Specifically, USAAVNC wanted to know if battle rostering added any significant benefit to crew performance beyond that achieved with the new training and evaluation program.

To answer this question, USARI conducted another test in October and November of 1993. Using 24 battle-rostered AH–64 aviators from Fort Rucker, crews were evaluated in a series of four different attack missions conducted in the AH–64 Combat Mission Simulator. All aviators received the Army's new crew coordination training about 4 months before the test. For two of these missions, the aviators flew as battle rostered crews.[3] For the remaining two missions, the same avia-

tors were randomly paired so that no crew had been previously battle rostered. Each scenario contained several challenges in the form of mission changes, hostile air defenses and helicopter threats, deteriorating weather, and unexpected equipment malfunctions. The test was to determine if crew performance (using the same aviators) differed significantly between the two methods of forming crews.

In comparing the cockpit behaviors of battle rostered versus newly formed crews, no statistically significant differences were found in any of the basic dimensions of crew coordination. IP ratings of both crew coordination skills and aircrew training manual task grades were virtually a dead heat between the two pairing conditions. In terms of mission performance, only one difference was found to be statistically significant: battle rostered crews achieved about 18 percent more target kills per target engagement with missiles than randomly assigned crews. All other measures of mission performance, including gun and rocket engagements, altitude deviations, exposure to threats, detection of in-flight malfunctions, and instrument approaches differed insignificantly between the battle rostered and randomly assigned crew pairings.

In post-test interviews with the aviators and IPs, USARI received both positive and negative comments regarding battle rostering. On the one hand, some aviators felt that battle rostering provides a higher level of familiarity in the cockpit. Others expressed concern that too much familiarity leads to overconfidence, complacency, and a reversion to nonstandard coordination techniques. To investigate this concern further, USARI compared self-ratings of performance by the aviators under each crew, pairing condition to ratings provided by the IP evaluators. In each condition, overconfidence was expressed by virtue of the fact that self-ratings of performance were higher than the IP ratings. However, the level of overconfidence was 50 percent higher in the case of battle rostered crews, as compared with randomly assigned crews. Thus, it seems that flying with a new crewmember causes aviators to be more objective in their self-appraisals.

As a result of these test findings, USAAVNC formally rescinded its policy of mandated crew readiness levels and battle rostering in a message dated 251200Z FEB 94. This message, in part, states that commanders may still choose to battle roster crews at their discretion. However, commanders are invited to take note of the recent test results and to guard against the negative habits potentially introduced by battle rostering.

A Final Word...

In summary, a number of significant developments have occurred in recent years regarding crew coordination. In comparison to the pioneering efforts taken in the commercial airline industry, the U.S. Army is light years ahead in the degree to which crew coordination training has been institutionalized. As a result of research specifically focused on the Army's tactical flying environment, crew coordination standards have been behaviorally defined in terms that are relevant to the average aviator. These training standards have been shown to positively impact both mission performance and flight safety. And, most importantly, the training has been accepted and endorsed by the senior standardization instructor pilots and IPs within the Army.

Perhaps the current state of affairs can be described best with a quotation from the recent USAAVNC message on battle rostering:

"The Army is still conducting crew coordination training which is separate and distinct from crew readiness levels and battle rostering. This training program is seen as the most effective solution for improving crew coordination."

After June 1994, Dr. Leedom will move to the position of Chief, Soldier Performance Division, U.S. Army Research Laboratory, Aberdeen Proving Grounds, Md. Questions and comments may be directed to the author at (410) 278–5916 or DSN 298–5916.

Threat and Countermeasure Factors in Risk Assessment

CW3 Stephen L. Woods
Training Development Officer
Aircraft Survivability Training Management Division
Directorate of Training, Doctrine, and Simulation
U.S. Army Aviation Center
Fort Rucker, Alabama

Attention: Threats are the most capable ever.

The threats of today are much more technologically advanced than any time in history. Armies understand the capabilities modern helicopters bring to the battlefield and have prepared against them. The most advanced weapon systems are available to any buyer. Third world armies are able to defend themselves without investing in research and development. Modern air defense weapons are considered commodities and are purchased much like you or I would purchase a personal computer, based on capabilities and function. Armies cannot afford to have attack helicopters erase their investments in ground forces.

Countering today's modern threats requires risk assessment.

All weapon systems have both capabilities and associated limitations. Analyzing the mission area threats reveals methods of capitalizing upon their system weaknesses and exploiting our system capabilities against them. Risk assessment involves identification of the cause of high risk and leads to steps we can take to reduce the risks. Direct combat action against an enemy will require a level of risk. Identification of the threats causing the risks is as important as identifying factors such as weather, terrain, and crew selection. When analyzing the mission, direct threats can be separated into technology types (or portions of the electromagnetic spectrum) such as radar, infrared, optical/electro–optical, and laser/directed energy weapons for ease of analysis. Some threat systems may fall into more than one type such as a radar threat with an optical/electro–optical backup mode.

All threats would be evaluated based on their ability to acquire and engage aircraft in their normal mission flight mode. Some threats may have a minimum effective altitude higher than the aircraft's mission flight mode. Although these threats may have a lower risk associated with them than lower altitude capable threats, care must still be taken with these threats. Understanding that minimum effective altitude is that altitude in which a properly trained crew under good firing conditions has a 50–percent probability of hit (P_h) at that altitude based on flat terrain. Below this minimum effective altitude, the P_h may be reduced but seldom is the threat erased. If the threat system is at an altitude below the aircraft, the minimum effective altitude may be very near ground level. (See figures 1 and 2.)

General operational considerations include:

. Does the threat have a home–on–helicopter mode or capability?

. Is the threat normally located forward of, near, or well behind the forward line of own troops (FLOT)?

. Does the threat support front line

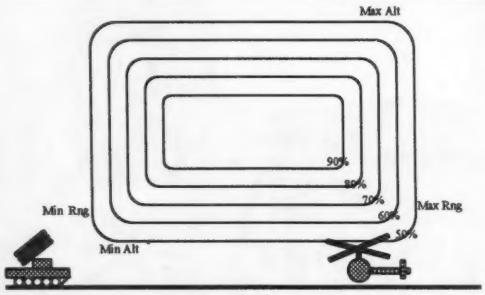


Figure 1.

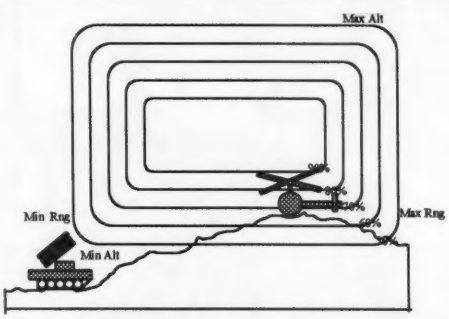


Figure 2.

troops, higher echelon, or does it rove in a gap filler type role?

. If the threat fixed, mobile, or self–propelled?

Once the threats are divided into guidance types, threats can be compared to aircraft survivability equipment (ASE) effectiveness. Considerations should be given to the following:

. Will warning be received from each radar threat?

. Is chaff reflective in the radar frequency of the threat and may it, therefore, be an effective decoy?

. Which threats will the aircraft's radar jammer provide for effective coverage?

Once ASE considerations have been taken into account, the threats can be prioritized and risk can be assessed. Are the radar threats on this mission high, medium, or low? What is causing the risk on this mission? This will aid you in identifying a valid means of reducing the risk. Risk reduction factors include:

. Night–time operation that degrades Optical/Electro–Optical threats with no night–viewing devices.

. Standoff ranges that place the aircraft close enough to shoot yet far enough away not to get shot.

. Accurate suppression of enemy air defenses to destroy/degrade known positions.

. Using aircraft with the least susceptibility during the start of the operation to destroy threats before bringing up the most susceptible aircraft.

. Orientation of the battle position and route of flight to place the sun or moon behind aircraft.

. Making use of overlapping coverage of Air Force standoff jamming aircraft during their strikes.

. Committing only the force necessary for the engagement thus reducing susceptibility.

. Using the combined arms approach. The use of ground forces to designate or destroy air defense artillery (ADA) assets. Brief ground forces to designate which ADA vehicles will be first.

. Brief all aircrews on the priority of threat vehicle engagement, ASE configuration settings, and vulnerabilities of their aircraft.

Plan tactics and select counter–measures settings.

Once threats are prioritized by guidance type, ASE configuration settings can be selected to optimize protection on this mission. The AN/APR–39A(v)1 has both operational flight programs (OFPs) and emitter identification (EID) software versions that must be set for the theater of operations.

. The AN/APR–39(v)2 has software version numbers and theater selection settings that set the EID.

. The M–130 chaff dispenser electronic control module must be set with the program settings to reproduce the correct aircraft radar cross–section size and the operator control unit must be set to program. The AN/ALQ–144A(v)1/3 must be set with the proper jammer program number based on the aircraft and threats.

. The AN/ALQ–162(v)1 must have the correct user data module setting.

. The AN/ALQ–136(v)1/5 must have the correct mission mode switch setting.

. The AN/APR–44(v)1/2/3/5 must have the correct filter connections. As you can clearly see, ASE systems depend on proper configuration settings. It is imperative that your ASE be configured to the threats expected to be encountered on a particular mission. Just as your Identification Friend or Foe (IFF) or communications radios must have valid configuration settings, so must your ASE.

Use these tools for risk analysis.

All school trained ASE/Electronic Warfare Officers (ASE/EWO) are trained to perform this risk analysis. The tools they use are the Aircraft Survivability Equipment Tactics, Techniques, and Procedures, dated 15 December 1990, with change 3 applied, and the Survivability Risk Analysis worksheet. (See figure 3.) The U.S. Army Aviation Center has a new ASE configuration setting guide available. For a copy, contact CW3 Woods, DSN 558–3917. The guide is classified SECRET and a written request from your unit's security manager is required.

DATE:_____

SURVIVABILITY RISK ANALYSIS

AIRCRAFT TYPE:_____

MISSION DAY/NIGHT <100' / >100'

PROFILE 1 0 1 2 _____

THREATS:

RF ECM NO ECM _____

IR ECM NO ECM _____

E/O MASKING NO MASKING _____

L/D WARNING NO WARNING _____

PROBABILITY OF ACQUISITION
3 - HIGH
2 - MEDIUM
1 - LOW

PRIORITY THREATS

RF	IR	EO	LD
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

ECM SETTINGS: ALQ-144A* ____ ALQ-144A ____

APR-39A(V)1 ____ ____ APR-39A(V)2 ____ ____

ALQ-136 ____ ALQ-162 ____ APR-44 ____

M-130 CHAFF AH-1 2,2,2,2 AH-64 1,1,4,2

UH-60 1,1,4,2 EH-60 1,1,3,2

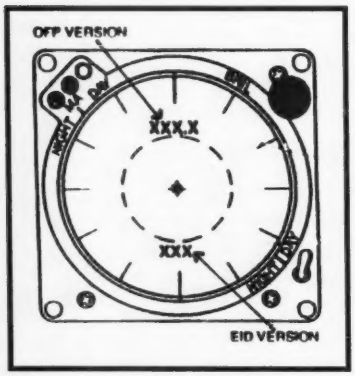
ACFT NON SUPPRESSED

Figure 3.

OFP & EID?

SSG Robert L. Niebrugge
Aircraft Survivability Training Management Division
Directorate of Training, Doctrine, and Simulation
U. S. Army Aviation Center
Fort Rucker, Alabama

A common problem involving aviators and avionics personnel who associate with the AN/APR–39A(V)1 Radar Signal Detecting Set (RSDS) is that they do not understand the significance of the Operational Flight Program (OFP) and Emitter Identification Data (EID) versions that are displayed on the indicator when initiating the system self–test. There is no reference to the different OFP/EID versions in the technical manual (TM), nor is the importance of the correct versions explained. The following information will provide a better understanding of the OFP/EID versions. Contact the Aircraft Survivability Equipment/Electronic Warfare Officer (ASE/EWO) for more information on this subject.



What is the OFP?

The OFP is that part of the AN/APR–39A(V)1 software that controls processor operations. Portions of the OFP are classified and are stored in the removable User Data Module (UDM), also known as circuit card assembly (CCA) A7.Other unclassified portions of the OFP are stored in CCAs A4, A5, and A6.

The OFP directs all processor activity. This includes sorting the signal environment, comparing received signal parameters to the stored EID, and generating the appropriate symbol and synthetic voice commands.

What is the EID?

The EID is that part of the AN/APR–39A(V)1 software that holds specific descriptions (threat library) of known threat signals. The processor compares each incoming signal with the EID. When a match occurs, the processor generates the appropriate threat symbol and synthetic voice message.

The EID is classified and is stored in the UDM; therefore, the UDM is classified. Update the EID by replacing the UDM with one having the desired EID.

The EID version depends on the area of operation, and the OFP depends on the Aircraft Survivability Equipment (ASE) configuration. The minimum OFP version for aircraft not equipped with the AN/AVR–2 Laser Detecting Set (LDS) is 020.9. Aircraft equipped with the LDS should have an OFP of 521.1 or 022.2.

The available EIDs are as follows:

-017, 023—Global (being phased out, contact the unit ASE/EWO)

-018, 024—Southwest Asia (recommended for continental United States and Germany units)

-025—Southcom

-026—U.S. Navy boats

-027—National Training Center (deployed units only)

-028—Korea

-029—Yugoslavia

NOTE: EID 517 or 600 series, contact the unit ASE/EWO immediately.

Are OFP/EID versions correct?

If OFP/EID versions are incorrect, contact the company ASE/EWO. The company ASE/EWO should contact the brigade ASE/EWO. The brigade ASE/EWO will contact PM–AEC with a total number of versions required for the brigade.

It is imperative that Avionics Radar Repairers (68R) verify the correct OFP/EID versions when testing and should also verify after replacement of CCA A4, A5, A6, or A7. To avoid unnecessary maintenance time and cost, do not use the National Stock Numbers (NSNs) found in TM 11–5841–294–30P when requisitioning the above mentioned CCAs.

There are many different OFP/EID versions in the supply system; therefore, if normal requisition procedures are used it is unsure which software version will be received.

OFP/EID version contact: PM–AEC, ATTN: Jim Carter, 4300 Goodfellow Blvd., St. Louis, MO 63220; DSN 693-5539, COM 314-263-5539.

Verification Procedure

The following matrices reflect the available OFP/EID versions and the compatibility with other ASE:

1. Using the ASE matrix, locate the letter that reflects the configuration code for the aircraft.
2. Using the configuration letter, locate the applicable OFP/EID codes on the OFP/EID matrix.
3. Verify correct software versions.

ASE MATRIX

POSSIBLE INSTALLED EQUIPMENT

CONFIG	APR-44	AV3	PROD AVR2	AAR-47
A	YES	NO	NO	NO
B	YES	YES	NO	NO
C	YES	NO	NO	NO
D	YES	YES	YES	NO
E	YES	YES	NO	NO
F	YES	YES	NO	YES
G	YES	YES	YES	YES

OFP/EID MATRIX

EID VERSION	OFP VERSION 020.9	521.1 (AVR2)	021.2	021.5	022.2 (AVR2)
017	A	X	B	X	B
018	A	X	B	X	B
023	C	D	E	F	G
024	C	D	E	F	G
025	C	D	E	F	G
026	C	D	E	F	G
027	C	D	E	F	G
028	C	D	E	F	G
029	C	D	E	F	G
605	C	D	E	F	D
606	C	D	E	F	G
618	C	D	E	X	D

X=Incompatible OFP/EID
017=Global version EID
018=Gulf version EID
023=Global version+AAR-47
024=Gulf version+AAR-47
025=Southcom EID
026=US Navy boats EID
027=National Training Center EID
028=US Army Korea Theater EID
029=Yugoslavia EID
605=Suitcase Trainer EID
606=Suitcase Trainer+AAR47 EID
618=521.1 OFP Global EID

020.9=Basic AV1 OFP/EID
021.2=020.9 with AV3 configuration
021.5=AAR-47 Interface added to 021.2
022.2=AAR-47 Interface & left/right added to 021.5
521.1=020.9 with AVR-2 Interface

AH–64A Apache Single–Engine Considerations

Major Bloo Anderson
British Liaison Officer/AH–64 Standardization Pilot
Directorate of Evaluation and Standardization
U.S. Army Aviation Center
Fort Rucker, Alabama

This article addresses some safety issues raised by impending changes to TC 1–214 and should make AH–64 aviators more aware of single–engine considerations in day–to–day operations.

Several years ago, I watched an aircraft crash as a result of a single–engine failure. In the subsequent accident investigation, it was established that both crewmembers had later died as a result of carrying out improper emergency procedures. The pilot on the controls had not understood his aircraft's single–engine performance limitations.

Crew safety is hardly the primary factor for consideration during an attack helicopter mission; however, understanding our aircraft's single–engine capabilities and limitations, especially in a high–risk environment, may make the difference between success or failure. During training, it may prevent an incident from becoming an accident. In recent months, it has become apparent there is a lack of understanding about why and how we calculate single–engine performance and what we should do with the resulting information while airborne.

Training circular (TC) 1–214

The information contained in TC 1–214, Aircrew Training Manual Attack Helicopter, AH–64, task 1004, Prepare DA Form 5701–R (UH–60/AH–64), Performance Planning Card (PPC), was written before change 21 of TM 55–1520–238–10, the operator's manual. This change introduced the performance data not only for 701 C–equipped AH-64 Apaches, but also a single-engine, maximum torque available chart (2.5-minute limit) for the 701–engined Apache. Along with others, task 1004 will be changed to reflect the use of these latest charts.

At present, task 1004 states, in items 9 and 35, that maximum torque (single–engine) should be computed not to exceed the continuous torque limit from figure 7–2, pp. 7–9 of the operator's manual, which is based upon a turbine gas temperature (TGT) limit of 867 degrees celsius. These torque values are subsequently used to calculate maximum allowable gross weight (GWT) (single–engine) for the departure, cruise, and arrival conditions, while minimum single–engine speed (henceforth referred to as Vs) is computed from the cruise chart. For the purposes of illustration, assume a situation giving a pressure altitude of 300 feet, while the free air temperature (FAT) is 30 degrees celsius. Using a representative planned weight of 15,500 pounds (lbs) in such a situation, we calculate a maximum available **continuous**, single–engine torque of 106 percent which, in turn, allows a maximum allowable GWT (single–engine) of 19,000 lbs and Vs of 24 knots indicated airspeed (KIAS)/36 knots true airspeed (KTAS). (A maximum mission gross weight of 17,650 lbs is assumed to be the norm. The above information, therefore, indicates that, at or below this maximum weight, the aircraft is capable of sustained flight in a single–engine configuration at Vs).

Using the same ambient conditions and aircraft weight, but using the 2.5-minute limit chart, (based upon a TGT limit of 917 degrees celsius) figure 7–2, pp. 7–10 of the operator's manual, we find that maximum available torque single–engine is 117 percent, which allows a Vs of 19 KIAS/30 KTAS and a maximum allowable GWT (single–engine) of 20,500 lbs. (This last figure may be of significance for flight with one or more auxiliary tanks fitted and filled.)

The figures obtained from the preceding paragraphs indicate single–engined flight is possible at departure weight, but the aircraft must be at or above Vs. In other words, on departure, if an engine fails **below** Vs, continued takeoff will not be possible **at that weight**, even using maximum available single-engine power, unless the aircraft is able to accelerate above Vs. This is usually achieved by trading altitude for acceleration. However, in many instances during a takeoff, or while performing hover or slow–speed maneuvers, the requisite altitude and space are not available to do this.

This highlights the significance of calculating Vs. By using torque from the 30-minute limit chart, available single–engine power has been artificially limited by basing calculations upon a TGT of 867 degrees. In reality, following a single–engine failure, power available on the aircraft engine is limited by the higher TGT of 917 degrees. This artificiality results in a higher derived Vs than is actually the case. The difference may be vitally significant to a pilot's performance planning and the way in which he or she handles a power failure during a mission. A lower Vs is always preferable in the event of a power loss. For this reason, it normally should be calculated using torque values interpolated from the 2.5–minute limit chart.

Jettison of wing stores

You will be aware departure performance was calculated at a specific weight and the Apache has a system that enables jettison of wing stores. Losing an engine during a critical stage of flight

is exactly the occasion for considering use of this facility to reduce aircraft weight. Having planned our maximum GWT single–engine and Vs properly, we will be aware of being above or below Vs if an engine fails and how much we may increase performance/decrease weight by jettisoning our wing stores.

Continuing to use our conditions from above, in an aircraft carrying eight missiles and two empty rocket pods, using the jettison will lighten the aircraft by about 1,255 lbs; thereby reducing the power requirement at original Vs by 13 percent (single–engine) and further reducing Vs itself by about 7 KTAS (using torque from the 2.5–minute limit chart). The increase in performance **available** and decrease of performance **required** as a result of reduced GWT in the above situation is obvious and serves to illustrate why wing stores jettison should always be a consideration following an engine failure.

Having said this, just because wing stores are jettisoned will not, in some critical situations, automatically permit the aircraft to fly away. There are many conditions in which loss of an engine is absolutely decisive, and no matter what a pilot does, continued flight will just not be possible. However, being prepared; being cognizant of the planning information; and being situationally aware during an engine failure will enable the professional pilot to make a timely assessment and decision that may save the crew's lives and possibly the aircraft.

Consider now the situation of operating at the National Training Center in summer, when pressure altitude (PA) is commonly 4,000 feet and temperatures are 30 degrees celsius. We have a 17,000–lb aircraft with 2,000 lbs of jettisonable wing stores. Maximum torque, single–engine is 102 percent (2.5–minute limit).

This means that, upon departure, Vs will be 40 KIAS/56 KTAS while maximum allowable GWT (single–engine) will be 18,100 lbs. The higher than average Vs may elicit comment from a planning crew, but further inspection may reveal cautionary information.

Bearing in mind that Vs was calculated from the 2.5–minute chart, we should be aware that, in the event of an engine failing, not only is Vs relatively high, but the power required to maintain sustained flight may only be used for 2.5 minutes (contingency) if we wish to avoid damaging or destroying our remaining good engine.

Perhaps, under these conditions, we should calculate our maximum allowable gross weight (single–engine) from our 30–minute chart? Doing so reveals that, to remain within operating limits, our continuous torque available is now 92 percent, making Vs 62 KIAS/77 KTAS and our maximum allowable GWT (single–engine) only 16,700 lbs.

Assume conditions as above with our aircraft loaded to 17,000 lbs, and an engine failing during forward flight and at an airspeed above Vs. This aircraft could fly quite safely without jettisoning wing stores but only for 2.5 minutes because its contingency power would be required to remain airborne.

If flight for longer were necessary, weight must be reduced by a minimum of 300 lbs, reducing the power requirement sufficiently to be within continuous torque limits. Perhaps, in this case, having 2 1/2 minutes to choose time and place, a pilot might selectively jettison wing stores (bear in mind center of gravity (CG), especially if auxiliary tanks are full) or could elect to jettison all stores simultaneously.

It should now be obvious from the above that, when preparing a PPC, maximum allowable gross weight (single–engine) should be calculated using the 30–minute limit chart. If any calculation results in a figure of **less** than 17,650 lbs or the **actual** aircraft weight, single-engine GWTs and Vs's should be calculated using both 30– and 2.5–minute limit charts to ensure crews are fully aware of their single-engine considerations.

Remembering the practice of simulated single–engine failures while hovering out of ground effect (OGE), it may be recalled that, even under controlled conditions with the pilot expecting to lose an engine, altitude lost in achieving Vs can be considerable.

On good days, heading into wind with a relatively light aircraft, altitude lost to gain 32 KTAS may be about 100 feet while, with an adverse wind, a heavy aircraft and a slightly slow procedure, altitude lost can be as much as 300 feet.

The lesson here is that, unless we hover in our battle positions (BPs) at 300 feet, we shall invariably be required to do something other than a standard fly–away drill in the event of a power failure.

Using the Apache's design features

If continued flight is not possible following a single–engine failure, we should be aware of the Apache's outstanding crash survivability record and use the design features incorporated in the aircraft that can save our lives and minimize damage to our airframe. Wing stores jettison should always be considered and drooping main rotor speed (Nr) to the low normal range may also be feasible while seeking a suitable place to land. However, the primary aim must be to ensure the aircraft contacts the surface in a level attitude, thereby enabling the gear and seats to "stroke" and absorb any excessive vertical accelerations.

Knowledge of Vs, maximum allowable GWT (single–engine), and situational awareness through prior planning will ensure that, should a crew ever face a low-speed or low-altitude power problem, the decision of ***what*** must be done has already been planned for before the decision being required.

Crew coordination and planning

Crew coordination is used in the process of planning responses to a power failure, not just during pre–flight, but also during the mission itself. Takeoff, landing, and low–level and hovering flight are all situations in which the crewmember not on the controls (workload permitting) can assist the flying pilot in situational awareness. During takeoff, crews should be aware of "Vs" as the aircraft accelerates above that value. During an approach to a hover or landing, they should likewise be aware of being "committed" to land and/or jettison stores in the event of a power failure when speed is reduced below Vs.

For those units equipped with 701C–engined aircraft, the situation is further

complicated by having intermediate and maximum power available besides that of contingency; however, the planning process is the same as for 701s. Having more installed power available means the marginal conditions may be encountered 1ess frequently; however, in low-speed, low–altitude flight below Vs, considerations will be identical.

Conclusion

In conclusion, several statements may be made as follows:

. Single–engine maximum allowable gross weight and Vs should be planned and briefed for departure, cruise, arrival, and any intermediate conditions. (They may vary enormously.)

. Aways calculate maximum allowable GWT (single–engine) using torque interpolated from the 30-minute limit chart (701 or 701 C engine). If this figure is greater than actual or planned aircraft weight, no further GWT calculations are required. Whenever this calculation results in a figure less than actual or planned aircraft weight, torque values should be calculated from both the 30–minute and 2.5–minute limit charts and GWTs calculated accordingly.

. Vs should always be calculated using torque interpolated from the 2.5–minute limit chart (701 and 701 C engines); however, if GWT is a limiting factor or if flight on one engine may be required over any extended period; Vs should be calculated using torque figures from **both** 30–minute and 2.5–minute limit charts. This is true when flying in an environment in which normal landing is impossible. e.g. recovering from cross–FLOT operations or flying over the sea.

. The decision to jettison stores should not be an automatic reaction to a power failure at low speed/low altitude, but its consideration should be planned using the PPC and briefed before flight. Always be aware of power requirement, power available, and power being used; e.g., maximum single–engine torque available (contingency) 118 percent. Therefore, in level, low–speed flight, dual–engine torque values of less than 59 percent indicate that your aircraft is below Vs.

. Aircrew coordination techniques should be considered to enhance a crew's awareness of Vs during all takeoffs, landings, and low–speed/low–altitude maneuvering.

. Minimize time spent in environments in which loss of an engine is decisive.

. In certain environmental conditions, depending upon an aircraft's configuration and weight, single–engine flight will just not be possible. In such circumstances make sure, by carrying out correct planning, you are aware of it.

. During low speed or hovering flight, always maintain an awareness of wind strength and direction.

. Planning, briefing, and flying with single–engine performance awareness will enhance the safety of every flight, no matter how routine.

Pilots should always be aware of the Apache's outstanding crash survivability record and use the design features incorporated in the aircraft that can save their lives.

COMMANDER'S QUARTERLY SAFETY REPORT

CW3 Ronald B. Ritter Jr
Squadron Safety Officer
6th Squadron, 6th Cavalry
11th Aviation Brigade

The 6th Squadron designed and implemented the use of this report as a management technique to assist and monitor an effective safety program.

As a squadron safety officer, I am often asked how I—

. Plan the safety program in a manner that focuses on the priority issues at hand.

. Ensure the many safety classes and councils are properly scheduled and conducted.

. Ensure safety awards, hazard reports, safety surveys, and safety statistics are managed effectively, while ensuring compliance with different regulations.

The only answer I have is ***plan, plan, and plan some more***. I realize that many times "Flexibility is key." However, the better the plan is and the further out it projects, the easier it is to be flexible when changes occur. Recurring safety programs and issues should be planned about a fiscal year in advance. Details should be finalized at least a fiscal quarter out.

Many times safety managers are overwhelmed with all the requirements they must complete. A considerable number of recurring events and issues must be managed to ensure an effective safety program. These recurring events and issues do not even consider that the safety problems arise on a day–to–day basis. Neither commanders, nor safety officers, can do it all.

These are the reasons the 6th Squadron, 6th Cavalry, 11th Aviation Brigade, developed and implemented a "Commander's Quarterly Safety Report." Four purposes of this quarterly report are—

. Identify what we have accomplished in the previous quarter, and whether or not we have met our safety objectives and goals. (The report also identifies any hazards or shortcomings we may have, and provides a method to track those issues.)

. Help us plan the future quarter. (The report activates the decision-making and planning thought processes. When implemented with a year plan, it simplifies and reduces conflicts between safety events and the unit training schedule.)

. Act as a "mentoring" tool for inexperienced safety personnel. (By encouraging them to compile safety statistics, analyze previous quarters accomplishments, and conduct short– and long–term planning, they should be operationally effective when assigned at the squadron or brigade levels.)

. Provide commanders at each unit level with a "snapshot picture" of their safety programs. (This information could be useful when available during "command and staff" meetings, or any other meetings when safety may be discussed.)

The format we adopted is very simple to complete when automated, and seldom takes more than 1 hour to complete (Apprendix A). The benefits are tremendous. We task each troop safety officer to complete and forward the report to the squadron safety officer within 5 working days after the end of each fiscal quarter. I then compile all the information for the squadron commander within 10 working days after the end of the fiscal quarter.

The actual content of the information we use could be varied depending on the type of unit it will serve. If your unit wishes to implement a program like this, feel free to modify it to your needs. Remember, it is a management tool that helps make the safety program more productive by focusing on the priority areas through effective planning.

Items 1 though 7 are self–explanatory. They help determine the training and resource requirements needed to maintain an effective and efficient safety program.

Items 8 and 9 are aviation and ground safety statistics. This is important for trend analysis. Our general consensus was that this information was needed quarterly. The accident rates were computed using the formulas outlined in AR 385–40. Although the statistics may not be as accurate or meaningful as those provided by the U.S Army Safety Center, which has the Army's statistical base, we found them useful for the purposes of the 6th Squadron.

APPENDIX A - (COMMANDER'S QUARTERLY SAFETY REPORT) to ANNEX 18 - (RECURRING SAFETY REPORTS) to 6th Squadron, 6th Cavalry, Safety SOP

MEMORANDUM FOR: COMMANDER, 6th Squadron, 6th Cavalry

QUARTER/YEAR OF REPORT: 2d QTR, FY94

1. Safety Meetings/Training:

a. Dates and topics of safety meetings or training conducted during the quarter:

8 Jan Accident Reporting/Pre-Accident Plan
15 Jan Aircrew Communications/ALSE/FOD
5 Feb Workload Performance/Ramp Parking
26 Feb Hearing Conservation/FOD Prevention
Risk Assessment Worksheets/HIRTA
5 Mar Terrain Flight Hazards/POL Safety
25 Mar POL Safety/Hazardous Materials
Field Safety/Safety Statistics

b. Dates/topics of next quarter's safety meetings/training events:

23 Apr ATC Operations/Available Resources
28 May Heat Stress/Situational Awareness
Hot Wax Injury Prevention/Water Safety
7-9 Jun Squadron Drownproofing
11 Jun Summer Flight Operations
25 Jun Brigade Safety Day

2. Squadron Safety Councils:

a. Date of last Aviation Safety Council: 8 Feb 94

b. Date of last Aviation Safety Council: 8 Apr 94

c. Date of last Enlisted Safety Council: 5 Mar 94

d. Date of next Enlisted Safety Council: 21 Apr 94

3. Hazard Inventory Logs:

	QTR	FY
a. Hazard Inventory Logs incomplete:	2	2
b. Inventory Logs completed:	0	0
c. Hazard Inventory Logs total:	2	2

d. Identified Hazards with a Risk Assessment Code (RAC) of 1 or 2

94-2 III/V POL Storage Facilities

4. Hazard Reports (OHRs, DA Form 4755s):

	QTR	FY
a. Total Hazard Reports:	2	6

b. Date of last Hazard Report: 15 Mar 94

c. Topic of last Hazard Report: Flares fired at aircraft.

5. Safety Inspections:

a. Date and areas inspected during the quarter:

11 Feb 94 V CORPS AORSE Inspection
1-12 Mar 94 Semiannual Safety Survey

b. Scheduled dates and areas to be inspected next quarter:

19-23 Apr 94 DES Inspection

6. Safety Trained Personnel:

a. Number of safety trained officers: 6

b. Number of safety trained NCOs: 4

c. Identify unit's safety shortage, if applicable: Squadron is short safety NCOs with the A2 identifier.

7. Remarks, Comments, Safety Concerns:

The Squadron received a "**Commendable**" overall rating during the V CORPS AORS inspection.

8. Aviation Safety Statistics:

MISHAPS

CLASS	FREQUENCY	RATE*
A	0	0
B	0	0
C	0	0
D	1	100
E	7	697

CAUSES

CAUSES	FREQUENCY	PERCENTILE
Human Error	1	12.5
Material Failure	7	87.5
Environmental Factors	0	0.0

Quarterly AH-64 Flight Time Flown @:

516 Hrs

Quarterly OH-58 Flight Time Flown @:
407 Hrs

Quarterly UH-60 Flight Time Flown @:
81 Hrs

Total Quarterly Flight Time Flown @:
1004 Hrs

Total FY Flight Time, To Date: 2,278 Hrs

Total Quarterly Accident Costs: $2,150.00

Total FY Accident Costs, To Date: $3,400.00

Date of last Aviation Class A, B, or C Mishap:
16 Mar 93

Units Total Accident Free Flight Time:
4,758 Hrs

NOTES:
* RATE = (100,000 hours x Mishaps)/Hours Flown.

@ Flight Time will be obtained from the DA Form 1352, ending the 15th of each month.

9. Ground Safety Statistics:

GENERAL MISHAPS

CLASS	FREQUENCY	RATE 1
A	0	0
B	0	0
C	1	92
D	2	183

AMV MISHAPS

CLASS	FREQUENCY	RATE 2
A	0	0
B	0	0
C	0	0
D	0	0

CAUSES

CAUSE	FREQUENCY	PERCENTILE
Human Error	3	100
Material Failures	0	0
Environmental Factors	0	0

Quarterly total number of lost workdays because of injuries: 17

FY total number of lost workdays because of injuries: 17

Quarterly Total Accident Costs: $2,040.00

FY Total Accident Costs, To Date: $2,540.00

Date of last Ground Class A, B, or C Mishap:
5 Aug 93

Total Number of Accident Free Days:
51 though 31 Mar 94

NOTES:
RATE 1 = (200,000 hours x Mishaps) /2,184 manhours.

RATE 2 = (1,000,000 miles x Mishaps)/miles driven.*
* 3,000 miles for Troop
* 15,000 miles for Squadron

Summary

I have found the use of this "Commander's Quarterly Safety Report" to be very useful for the planning and implementation of an effective and efficient safety program. If I have not sold you on this concept as a management tool, at least consider it.

During recent V CORPS and Directorate of Evaluation and Standardization safety inspections, the use of this report was noted as a "Commendable" idea and technique. It can help to build credibility for your safety program!

I would certainly appreciate hearing comments on this report from safety officers. Feel free to contact me; my address and phone number are CW3 Ron Ritter, HHT, 6th Squadron, 6th Cavalry, CMR 416, Box 425, APO AE 09140–5000; DSN 467-4410.

SAFETY

BATTLE SAFETY

CW4 Dennis E. Dura
Headquarters and Headquarters Detachment, 1/137th Aviation Battalion (AVIM)
Ohio National Guard
Columbus, Ohio

The battle lines are drawn. The enemy is maneuvering for the attack. Our gunships are ready to engage and destroy the enemy's advancing elements. Safety is the last thing a gunship or scout pilot should have on his mind—or is it?

Safety attitudes and concepts never should hinder the accomplishment of the mission. They should enhance the chances of success. If we ignore safety and attempt to successfully overcome the enemy, we will either lose or win at a cost that may have unpleasant results in later battles. Flying safely during battle may sound like a contradiction in terms, but it will maximize the survival of our assets that can be used again and again.

Combat safety can encompass many aspects of an operation. The three major areas of concern for Army Aviation are operation of the aircraft, the crew's actions, and the commander's actions. If we violate the safety principles involved in any one of these three, we may not be around to fight another day.

Figure 1 shows three possible regions of operation for the aircraft. Because of ignorance or panic, if a pilot attempts to operate an aircraft in the first region of figure 1, an accident will occur. By exceeding some physical limitation or violating some basic law of physics, the aircraft will be brought down—not by the enemy, but by the failure of some physical component. This kind of loss gives the unit a self-inflicted handicap in the face of danger and depletes its combat effectiveness.

Operating in the second region of figure 1 is operating on the edge with no reserve. An accident could happen if there is a weak component; however, the pilot may find it necessary to operate in this region to maximize his combat flight techniques during battle. A good maintenance program is essential and pilots should never abuse their aircraft during training. When necessary, we expect our aircraft to perform as advertised.

The third region of figure 1 is the normal operating region of the aircraft. Operating the aircraft within its normal parameters drastically

Region 1. Violating laws or operating above the physical limits of the aircraft	Region 2. Operating at the limits—no room for error	Region 3. Operating within all normal aircraft limits

Figure 1. Aircraft regions of operation

Region 1. Erratic behavior or attempting to fly beyond skill level	Region 2. Operating at training proficiency limits	Region 3. Operating within skill limits

Figure 2. Crew choices

reduces the possibility of an accident.

Figure 2 addresses the crew. We throw many fancy words and phrases around like "situational awareness, cockpit management, crew coordination," etc., but do we seriously take them to heart? If not, the crew could easily find themselves operating in region 1 of figure 2. When fear or excitement causes the adrenalin to flow, we will respond like we have been trained. Usually there is no time for a reasonable discussion of possible solutions to a threat. If we attempt to exceed our skill level with a panic maneuver or respond with erratic behavior, an accident will occur. You will be defeated by the ground, a tree, or some structure, and the enemy will have gained without ever firing a shot.

On the other hand, in the heat of battle, the aviator could choose to operate in region 2 of figure 2. You may have to operate at the cutting edge of your training. Pull out all the stops and engage the enemy at the limits of man and machine. In this region, because there is no margin for error, an accident is possible, but not likely, for a combat–ready crew.

The third region of figure 2 is operating well within your proficiency limits. It is the "no sweat," or "like a piece of cake" region that is not demanding anything out of the ordinary. The possibility of an accident is remote.

Figure 3 concerns the commander's actions during battle. Region 1 concerns the commander who becomes overwhelmed by events or acts beyond the principles of good leadership. The commander who acts irresponsibly when other courses of action are available causes an accident. Not knowing the capability of his soldiers, not understanding the effects of weather, and not having a tactical insight into the battle will channelize his assets into an accident scenario.

Region 2 of figure 3 involves tactical maneuvering during a battle that may not conform to classical or present day principles. The commander devises and issues battle orders based on sound judgment, good intelligence, and an understanding of tactical principles that can be extended or adjusted to fit the circumstances. This type of operation brings out the best of his troops; however, if everyone does not perform his part, an accident can happen.

The third region of figure 3 would be operating according to well–established tactical principles. There would be no accident because of unfamiliar tactical maneuvering.

In summary, operating in the first region of each figure not only generates accidents, but it reduces the possibility of a successful outcome of any battle. Operating in the second region of each figure will probably be necessary at some time during a conflict. This is why we train and maintain a high level of proficiency. There is nothing wrong operating at the limits when necessary, as long as we are aware of what we are doing. After all, we are the best combat helicopter aviators in the world!

Region 1. Erratic behavior, ignoring established principles, taking a chance based on panic or ignorance	Region 2. Extrapolating into new tactical action based on sound judgment and knowledge	Region 3. Operating well within established tactical scenarios

Figure 3. Commander's actions

SAFETY

COMBAT STRESS—
IT CAN SAVE YOUR LIFE OR IT CAN KILL YOU

Captain Michael D. Miller
Headquarters and Headquarters Company
25th Infantry Division (Light)
Hawaii

Nearly 13 years ago as a young chief warrant officer (CWO), I witnessed for the first time the effects stress could have on an aviator.

Situation

On a beautiful, spring morning, I was flying trail in a flight of five Hueys over the Nisqually river at Ft. Lewis, Wash. My attention was drifting between the American Indians netting salmon on the milky river below and the aircraft to my front. Suddenly, I witnessed two large puffs of smoke come from chalk four. Compressor stall! Just as I was about to make the call, the copilot of chalk four came up on the net in a most peculiar voice.

In what can only be described as a high–pitched, Elmer Fud tone of voice, he exclaimed, "Weeeee goinggg down now, weeee going down now!" If not for the seriousness of the situation, I would have surely busted out laughing. The copilot was a burly 200–pound ex–jock with a voice to match.

The pilot did manage to nurse the aircraft to a safe landing zone (LZ) between the tall stands of Douglas Fir to Point De Hoc. Then his burly copilot threw up on him. I'm sure to this day that pilot still has vivid memories of his first encounter with a severe case of acute stress. I had the unfortunate misfortune of experiencing that very same occurrence with an initial entry student of mine several years later.

Definition of Stress

Stress is the body's response to a demand (stressor). Stressors are events or situations that require change, create internal emotional conflict, or pose a threat.

Stress is often thought of as a "destructive force that harms performance"; however, stress at times can be beneficial to increased performance. There are times when our biological reaction to stress heightens our senses and reaction time....

I experienced this reaction as a young teen riding a street bike with my father out across a high desert highway in Nevada.

As we were flying down the road between 60 and 70 miles per hour, a couple of coyotes ran in front of the cars directly to our front. The cars braked, which left us with two choices: hit the back of a car or ride the bike. My dad quickly decided to throw the bike down and ride it. The amazing thing is while our minds raced, the events appeared to slow. It appeared to take an eternity to throw the bike down and to climb on top of it although in reality it occurred in a very short time. Both my father and I remember seeing the headlight hit and the glass break away in individual pieces and tinkle down the road in slow motion. Simultaneously, I remember my Dad pulling me further atop the bike to avoid more injuries.

I've experienced this effect on several instances since then, and one was a result of combat stressors.

Definition of Combat Stress

Combat stress is the mental and physical process within the individual soldier of reacting to, and dealing with, combat stressors. Stress depends very much on the individual's appraisal of the stress and its context.

Situation

As a first lieutenant assigned to a special operations unit during Desert Storm, I was designated flight leader on a mission to infiltrate special forces operational detachment ALPHA teams (A–Teams) deep into Iraq. To avoid threat detection by both radar and visual means meant the mission had to be flown at night; it also would have to be flown at very low altitudes, no higher than 20 feet above ground level (AGL).

Despite unexpected sand storms, multiple LZs, and a flickering main transmission chip light acquired 200 miles into Iraq, we executed both infils to the 160th standard of plus or minus 30 seconds! It was on our way back to Saudi Arabia that things got a little more interesting.

We still had the intermittent chip light that had since turned to steady since departing the second LZ. When out of no where.... Wham! We were hit hard, not by enemy fire, amazingly, but by a huge B–I–R–D. I was flying from the left seat; hence, I wasn't about to let some big, ugly bird come through my windscreen. Instead, I maneuvered just in time to let it crash into my stick buddy (CW3 Chris Durkins). Crack!

Besides the chip light and the crack in the windscreen, we began to lose what moon illumination we did have. The moon began to set low on the horizon. I thought things had to get better, but they didn't. We had received an enemy situation update over satellite communication warning of a possible ZSU 23–4 along our route, which our proximity warning indicator (AN/APR–39) confirmed.

Our lead navigator, CW3 Durkin, altered our course to the east to avoid the known threat. Then chalk two (Lady Godiva) came up on the net with a report of its own chip light. I was just about to experience another adrenaline rush.

Just as we crested, a small dune with chalk two in tow, my heart jumped. Armor! A dozen or so of the worst kind were all around us on adjoining ridgelines. My mind and body reacted to the jolt of adrenaline and I increased speed to 147 knots at altitudes as low as 5 feet AGL, zig–zagging to avoid fire.

Somehow my chalk two, piloted by CW4 Crisafulli and CW3 Randy Stephens, managed to stick with me. Again my mind and body raced and I could see things more clearly and react to them. I could pick out enemy vehicles while avoiding rocks and boulders, barely 5 feet below me on the desert floor. I could read nearly every cockpit indication while cross–referencing the forward–looking infrared, and analyzing the AN/APR–39. Soon we cleared the area and were on our way home.

At debrief, CW4 Crisafulli exclaimed we had received some overhead fire but well to the rear of our position. The induced adrenaline rush had saved my life again!

Our mission was a success because of "command emphasis" on a realistic training program, detailed mission planning, crew selection, and the right equipment. I would further add that our positive reaction to stress played a small part in it as well. Within 8 hours of completing this mission, we were called on an emergency extraction of another "A–Team" under fire....

Situation

On crank, smoke belched from our engine, and chalk two had to execute the mission alone. Operating on pure adrenaline, CW4 Crisafulli and CW3 Stephens executed a remarkable solo rescue.

Sources of Combat Stress

We know all too well; however, how unchecked stress can be detrimental, especially during war or in a combat situation.

Sources of combat stress are individual, organizational (unit), and battlefield as follows:

■ ***Individual.*** People tend to bring all their baggage from home to work. Family, marital, or money problems tend to distract the soldier from his or her assigned task as well as provide additional source for personal stress.

■ ***Organizational.*** Organizational stress occurs in situations within the unit. "Unclear chain of command, ineffective communications, and lack of unit cohesion" are, in my opinion, the greatest stressors within the unit.

■ ***Battlefield.*** Contributors to battlefield stress can be the direct result of conditions specific to the battlefield or stressors we in Army aviation face in our normal environment.

Battlefield Stressors

A laundry list of battlefield stressors includes but is not limited to—

- Possibility of death
- Continuous operations
- Low–light levels
- Fear of the unknown
- Uncertainty or lack of information
- Lack of control over the environment
- Enemy fire
- Sleep loss
- Mental and physical fatigue
- Interrupted day and night rhythms
- Adverse weather
- Death or injury of family members, comrades, and leaders
- Horrible sights and experiences

Detecting Stress

As leaders, officers and noncommissioned officers need to act as role models to prevent stress. We need to keep our communication channels open and look out for the soldier's welfare. As leaders, we need to communicate personally with our soldiers so that we are able to detect unusual signs of stress. If we do not know our soldier's normal demeanor or personality before a conflict, how will we know if he or she is experiencing stress?

SAFETY

THE EFFECTS OF FAMILY STRESS ON MILITARY AVIATOR FLIGHT DUTY PERFORMANCE

1LT Robert J. Antolick
Apache Helicopter Platoon Leader
B Company, 3–227th Aviation
APO AE

The purpose of this article is to educate military aviators and commanders concerning the effects of family stress on flying duty performance. The sources used are aviation psychologists and flight surgeons. Awareness of poor stress–coping signs and symptoms should place the aviation community in a better position to avoid aircraft accidents.

Family stress occurring in the military aviator's home can lead to loss of pilot situational awareness and a fatal aircraft accident. The unique personality of the aviator allows for excellent stress coping in the cockpit, but can lead to family stress. When a pilot no longer can cope with stress, adverse reactions result. Family stress can have an adverse effect on military aviator flight duty performance and can lead to accidents. Case studies have shown that family problems of a severe enough nature can lead to tension headaches, preoccupation, alcohol misuse, air sickness, depression, task overload, and loss of situational awareness (Senechal, Traweek, 1988).

Much previous research has been accomplished in the areas of life stress and stress coping. Fortunately, most military aviators are capable of coping with family stress. Military pilots are known for maintaining control even under the most adverse conditions (Dully, 1986). Unfortunately, the fact that pilots are very good controllers may be a direct cause of family stress in the home (Bentley, 1986). Alkov, Borowsky, and Gainer (1982, 1985) have concluded that military aviators having difficulty coping with stress are most likely to "act out" aggression toward other people or inanimate objects. Such aviators are prime candidates for aircraft mishaps.

Family stress as referred to in this article occurs as a result of problems

in the aviator's immediate family, i.e., arguments, financial problems, health problems, and difficulty with children. By understanding the aviator personality, effects of family stress, and signs and symptoms of inadequate stress coping, commanders and pilots can decide whether continued performance of flight duties is in the best interest of safety.

The Aviator Personality

Military aviation by nature is stressful. Long, irregular work hours; formation and night flying; high–speed terrain flight; complex aircraft systems; demanding mission constraints; uncomfortable field duty; and the constant risk of immediate emergency or death place unique demands on the pilot.

Military aviators, however, are recognized as high–stress copers and possibly even stress seekers (Alkov et al., 1985). The ability to handle high stress is a result of some basic generalizations in the military aviator personality.

Dully (1986) discusses four attributes that allow aviators to cope with stress in the cockpit—

■First, military aviators are controllers or seek to maintain control of their environment.

■Second, military aviators keep emotional distance from persons who tend to threaten their sense of control.

■Third, pilots are mission–oriented compartmentalizers who are not easily distracted from the task at hand.

■Fourth, military aviators are systematic and methodical and do not like surprises.

All these attributes keep the aviator mind on the mission and block out any extraneous stressors.

Bentley (1986) goes on to say that most aviators are of the *Type A* personality. This type of person tends to be obsessive–compulsive, highly motivated, achievement–oriented, and self–confident. Once again the aviator personality is well suited to handle the skill and discipline required to operate a multimillion dollar aircraft even in the face of death.

Although the general aviator personality is highly effective in the cockpit, the same personality often does not work well in the home. Dully (1986) places the control attribute at the root of family problems. For the aviator, control and feelings can't exist on the job at the same time. Unfortunately, the military pilot may use the same philosophy at home. When control is lost in the home, controllers tend to run away from family friction, making the situation worse.

The Type A personality, according to Bentley (1986), also causes problems in the home. An achievement–oriented, motivated, obsessive-compulsive aviator tends to create a more rigid and demanding environment in the home than those in the general population. The pilot may become frustrated upon discovering control of human beings is much less responsive than the mechanical flight controls of the aircraft.

The Effects of Family Stress

Most pilots are capable of coping with family stress and keeping it out of the cockpit. A stressful situation in the home triggers defense mechanisms in the pilot's ego. Leimann–Patt (1988) defines defense mechanisms as operative resources used either consciously or subconsciously to maintain ***biopsychological integrity*** and ***psychosocial integration***. Normal defense mechanisms are denial of a potentially dangerous fact, such as death; repression, or suppression, of inner drives or outer reality; and rationalization. These normal defense mechanisms assist in counteracting anxiety caused by stressful situations.

In 1985, Alkov et al. stated that "since the amount of stress encountered by aviators varies considerably over time and between individuals, the really important difference is in their ability to cope." A personal interview with K. B. Hodges (5 March 1992) related individual stress–coping ability to a psychic energy model. In this model, each aviator maintains a balance of mental energy distributed among commitments such as personal welfare, family life, work, and flying. As long as the balance is maintained, the aviator can effectively cope with stress. However, if a particular commitment requires more mental energy than the allotted amount, that energy is taken away from other commitments. For example, if an unusually large family argument occurs in the aviator's home, it may require an unusually large amount of mental energy to cope with the stress. The extra mental energy used may subtract from the mental energy required to perform aviator flight duties.

When the normal defense mechanisms fail and the military aviator no longer can cope with family stress, several things may happen. At this point there has been a threat to the basic aviator personality. The pilot can no longer compartmentalize, maintain control, or keep emotional distance from the problems at home. As this comes as a surprise to the aviator, it is difficult to maintain a systematic and methodical approach (Dully, 1986). Pilot errors may result as less mental energy is dedicated to flying duties.

Other effects caused by family stress can compound an already dangerous situation. Lack of sleep, self-medication, poor eating, and increased use of alcohol are common reactions to an unusually high level of stress within one's personal family life (K. B. Hodges, personal communication, 5 March 1988). These self–imposed stresses are well known among military aviators.

Specific effects of family stress on aviator flying duty performance can be found in Senechal and Traweek (1988). Actual case reports have demonstrated effects such as anxiety, distraction, preoccupation, air sickness, severe tension headaches, loss of situational awareness, failed flight evaluations, poor self–image, depression, and task saturation.

The most dangerous type of reaction to inadequate family stress coping is displayed by the aviator who "acts out aggression" toward other people or inanimate objects in an effort to regain control (Alkov et al., 1982). An aviator acting out aggression will have chronic interpersonal problems with other crewmembers and is more likely to take unusual risks in the operation of the aircraft. This type of pilot is a prime candidate for an aviation mishap.

Monitoring the Effects of Family Stress

It is extremely important for aviation leaders to monitor the well being of their pilots. A pilot having difficulty coping with family stress will display some basic signs and characteristics that the commander should not let go without notice. Alkov et al. (1982) lists several characteristics of aviators who were found at fault in aircraft accidents. These include marital problems, immaturity and instability, recent engagements to be married, unprofessionalism, difficulty with interpersonal relationships, trouble with superiors, disciplinary action, slow assessment of potentially troublesome situations, and recent trouble with peers. Commanders should watch specifically for a combination of these factors as they yield the potential for an aircraft accident.

Not only should commanders be alert for poor stress–coping signs, but so should the individual aviator and fellow aviators. Aviators should notice warning signs such as fatigue, frequent headaches, difficulty getting along with others, irritability, difficulty concentrating, heavy drinking, and recklessness (Picano, 1986). The bottom line is for individual aviators and leaders to evaluate their mental condition and the condition of fellow crewmembers before participating in flight duties. This is especially important when the pilot is experiencing family problems in the home.

Cures for Poor Family Stress Coping

An aviator who exhibits several of the signs and characteristics of a poor stress coper or who "acts out aggression" has been termed a failing aviator. This term is widely used in the aeromedical community as a pilot on the verge of an accident. The failing aviator should be restricted from flight duty by his commander and encouraged to receive counseling to resolve any problems. Senechal and Traweek (1988) list several case studies in which aviators who were victims of poor stress coping were returned to normal flight duties after minimal evaluation and therapy.

In addition, Picano (1986) lists several things that all aviators can do to enhance their stress–coping abilities: set realistic and attainable long-term goals, exercise regularly and eat properly, avoid self–imposed stresses, take time off and learn to relax, and take time to identify the major sources of stress and take action to deal with them. Commanders too can assist in preventing family stress by educating both aviators and their spouses on the aviator personality and the affects of family stress on aviator performance. (Karlins, Koh, and McCully, 1989). Utilizing the flight surgeon or aviation psychology expert to educate the aviation community will ensure a safer, less stressful environment for everyone (Senechal and Traweek, 1988).

Conclusions

Problems and conflict in the aviator's home can cause stress. Every pilot has the ability to cope with stress by nature of the basic aviator personality and by the use of defense mechanisms. However, the basic aviator personality is conducive to creating stressful situations in the family. As the level of family stress reaches a level to which the pilot can no longer cope, adverse effects may result causing reduced flying duty performance.

Military aviators having difficulty coping with stress may worsen the situation by the use of alcohol and other self–imposed stresses. The worst case scenario is the "failing aviator" who acts out aggression and takes unnecessary risks leading to accidents.

It is important for aviation commanders to monitor the stress–coping abilities of their pilots and take action when a dangerous situation results. Restriction or grounding from flying duties to allow time for problem solving and therapy will restore the aviator to a safe flying status.

A program on family stress by an aviation psychology professional will educate pilots and spouses on the factors that may lead to poor stress coping and the possibility of an aircraft mishap. If all members of the aviation community and their families are aware of the signs, symptoms, and effects of family stress, the "failing aviator syndrome" can be avoided.

References

Alkov, R. A., Gaynor, J. A., and Borowsky, M. S. (1985), Pilot Error as a Symptom of Inadequate Stress Coping, ***Aviation, Space, and Environmental Medicine***, 56, 244–247.

Alkov, R. A., Gaynor, J. A., and Borowsky, M. S. (1982), Stress Coping and the U.S. Navy Aircrew Factor Mishap, ***Aviation, Space, and Environmental Medicine***, 53, 1112–1115.

Bentley, V. C. (1986), ***Family Stresses in the Aviator***, Unpublished manuscript.

Dully, (Speaker), (1986), ***Sex and the Army Aviator*** [Film], Fort Rucker, AL, ETV.

Karlins, M., Koh, F., McCully, L. (1989), The Spousal Factor in Pilot Stress, ***Aviation, Space, and Environmental Medicine***, 60(11), 1112–1115.

Leimann–Patt, H. 0. (1988), The Right and Wrong Stuff in Civil Aviation, ***Aviation, Space, and Environmental Medicine***, 59(10), 955–959.

Picano, J. J. (1986, November), Coping With Stress, ***U.S. Army Aviation Digest***, pp. 19–20.

Senechal, P. K., and Traweek, A. C. (1988), The Aviation Psychology Program at RAF Upper Heyford, ***Aviation, Space, and Environmental Medicine***, 59(10), 973–975.

SAFETY

HUMAN ERROR:
ATTITUDE IS NO ACCIDENT

CW4 (Retired) E. D. Kingsley
Safety Consultant
COBRO Corporation
Daleville, Alabama

I was notified by telephone recently I had knowledge that would be helpful to a flight evaluation board (FEB) being held at a post near my home. Army aviators know an FEB usually is held to determine the fitness of an aviator to wear his wings. An FEB usually results in some administrative action, generally of an unpleasant nature, although that is not always the case. Anyway, I was surprised.

I thought the caller had the wrong Kingsley. "This is CW4 ***retired*** Kingsley, Sir. What did you say you needed?"

He explained I had been mentioned as an adverse character witness of an aviator. He mentioned his name and immediately began to expound on the circumstances leading to the call. But I couldn't hear him. My mind was 6,000 miles away, in another land, in another time, remembering this kid. I got a knot in my stomach just thinking about it... it was an old knot, an old problem.

One thing brought about the FEB. Lack of courage. Yes, this guy did a lot of things wrong, but his enablers were all those who said nothing, who did nothing, who envied some of his boldness. And the final enabler was the safety officer.

To be an Army Safety Officer (ASO) requires the courage to

deal with peer pressure. The ASO is there to remind the rest of us that there are limits, to sound the alarm when the risk is unwarranted or outright foolishness. No amount of education, boldness, or training can replace candor and courage in the duty of the safety officer.

Reminisence

I first met the aviator who was up for an FEB when I went to Korea. My second day in country, as I wandered through my new Flight Operations in Chun Chon, Korea, I saw a CW2 exactly like Rambo, for lack of better words. He didn't have the build, but the swagger was perfect...

I had to look again. He was wearing a turtle–neck sweater under his NOMEX flight suit (Air Force–issue NOMEX underwear, I was told later), with a Gerber (very popular, soldier–of–fortune combat knife) strapped outside one boot. His boots were spit–shined but not standard issue. They were some very expensive German mountain boots with the extra–wide sole. The kid came right over and shook my hand. He acted certain that my curiosity was ***envy***. He asked which aircraft I flew, and I explained that I wanted to fly a '58 (more flexibility for the ASO mission). He promptly informed me that ***he*** was the only '58 instructor pilot in the battalion, and that he'd get to me when he could...

Well, no big deal. I was the new guy. Anyway, there were other CW4s in the unit, and surely they weren't all asleep...

But the kid had been mentored by a hard–drinking, hard–fighting, divorced, regularly hung over, stressed–out, old warrant officer who made lots of bogus excuses, a primary enabler for unacceptable activity.

I immediately began to hear grumblings. I began to build a profile of this guy. For starters, the aviator often and regularly intimidated his fellows...if they did not cooperate, he would threaten to give them an unannounced checkride. Well, maybe the first pilot who told me this was just jealous...but then again, maybe all ***three*** of them weren't....

Then flight violations. Some were petty, open to interpretation. No problem. Rumor had it that he had flown night vision goggles (NVG) with a crewchief...and landed to a bridge at night! Just who could you believe about a story like that? Then...a young lieutenant came and told me that the kid had done it with him and it scared him to death, ***too***...

The ASO is there to remind the rest of us that there are limits, to sound the alarm when the risk is unwarranted or outright foolishness.

Well, well, well...the aviator owned a silver–plated, 9mm semi-automatic pistol. He carried it with him to the field. With his own ammunition. And there were other things. If I recall properly, the kid was recently divorced. And he had just been passed over for CW3.

Don't you think someone should have heard the bells on this guy before this?

I called the kid and asked him to see me. I had been medically grounded by that time, so he knew it was not to fly, and he asked why. I told him I had prepared a memorandum for record regarding his performance, which I considered outside the acceptable profile for an Army aviator, and he was furious.

"Who the heck do you think you are?"

"I am CW4 Kingsley, your ***safety officer***. Before I see the battalion commander, I think you might want an opportunity to see this..."

The aviator brought his commander, a West Point, just–made–the–major's–list captain. He was a good captain, and he was suave and cocky as the two of them read the list of (12, I think) problems...maybe charges would be a more accurate choice of words... The kid got madder and madder but said nothing.

The captain became flustered as he read on, and started on me with a real silly comment. "And just who says it is illegal to land to a bridge?" he sputtered.

"Sir, just tell me it was on his mission brief, and I'll make one of these up for ***you***, too..."

He looked over at his warrant officer. They said nothing. The aviator denied only one, a minor flight violation.

I became an outcast from the unit aviators over this memorandum. Even the aviators who had confided their comments to me asked not to be revealed... It was a dirty time.

The commander, who was unquestionably the finest commander I ever worked for, made it policy to reward aggressiveness. This habit, rewarding aggressiveness, is the one common denominator I have found in great commanders. (There aren't enough of these guys around, you know. After all, great commanders have to fight with the aggressive soldiers they have ***mentored***.)

The commander had given this aviator a "one" block (the highest mark possible, over all other avia-

tors in his category) in his OER (performance rating), and made him the Army Aviation Association of America (AAAA) Aviator of the Year from that unit. He did these things to get the kid promoted, and it worked (later, after I left). When I went to see the commander about this memorandum, he was furious. He swore he knew nothing of the pistol or any of the other charges, and raged about my audacity. He did not say it, but he acted like I was simply spreading gossip. But he said he'd look into it.

That old CW4 I mentioned earlier was the mentor to this young, struggling aviator. He had already been to the commander to discuss my "unfairness," my "dirty trick" before I saw the commander. That CW4 even came to me later to threaten me in a veiled sort of way. Anyway, the commander was poorly advised by a trusted warrant officer, and I believe he simply couldn't decide who was being truthful...or perhaps he had already decided before I got there...

To render a full accounting of my responsibility, I made several recommendations in that memorandum: relief of duty as Battalion OH–58 IP, mandatory in–country flight evaluation, psychological evaluation, and termination of his effort to extend in country. I had to leave the country 2 months later, so I never heard just what happened. But very little happened in 2 months.

FEB Outcome

This story has finally reached a suitable end. The aviator is out of aviation now, but we failed him. This aviator did not receive the required guidance from someone with authority when his behavior could have been modified, so he disregarded the guidance he did receive and felt justified to ignore both good sense and regulation. He could have been a fine aviator.

Many of the charges in the FEB were identical to ones in my memorandum for record. In fact, recent violations stateside got this FEB started, but it has been discovered that these activities have gone on his entire career. There was no change in behavior, I believe, because too many of his peers were acting as "enablers," while his commander was trying to encourage and protect aggressive people.

Valuable Lessons for ASOs

In hopes that this may be helpful to ASOs and commanders in the future, I have prepared a list of my most valuable lessons for safety officers. If you want to be a successful safety officer, or you are a commander and want to mentor a successful safety officer, read and ponder these things.

• Great commanders reward aggressiveness. But they should never forget that discipline is key to safety.

• The ASO does not and, in most cases by regulation, cannot prepare safety information as evidence for court. He does his homework and prepares to get help for the soldier. Aside from personal counsel, only the commander has authority required to help.

• The ASO must have the courage to face his peers without being cowed. If he disagrees with the commander, he must still be honest and advise the commander as well as his experience allows. But any soldier impervious to regulation must be addressed openly, regardless of his rank.

• When the ASO decides to act against peer pressure, he must be right. ***Must*** be right. Be right. One wrong will render the next 25 right decisions ineffective.

• Every serious action requires documentation with a memorandum for record, complete with your recommended countermeasures that reflect the consequences of inaction. The memo may be for your desk only, or for the entire chain of command. Be bold. A memo that says nothing is toilet paper. No commander must respond as recommended by the ASO. But if you make recommendations, the commander becomes accountable to act in some way. The welfare of the soldier, the unit, and your career depend upon it.

• The ASO must be serious and absolutely honest with his soldiers and officers. If you counsel a soldier, he may become unhappy, even loud about it. But it will not be long before your summons in the unit will bring whomever you need immediately, and they will come to do serious business.

• The ASO must not let trouble go somewhere else. Deal fairly, but ***deal*** with your problems.

• The ASO must display moral courage and sterling integrity. Do not drink at all. Ever. Do not have vices. The real men aren't what they used to be or pretended to be...

• The ASO must monitor his soldiers for peculiar behavior. All aviators are independent and each has a personality. But unusual bravado, unreasonable pride in certain acts or abilities, or too great a desire for a certain type of recognition (such as Broken Wing?) should sound alarms.

Conclusion

We were lucky this time. We lost a good soldier, but he is alive, and so are his crew. The system, slowly as it has worked, has worked.

We can do better. ***You*** must.

What Is Army Aviation Standardization?

CW5 William S. Turkoski
Standardization Officer
33d Aviation Group (Combat)
Fort Rucker, Alabama

Recently, I have participated in many conversations on the subject of aviation standardization. Most of these discussions centered around the definition of standardization and its functional application. This information was originally distributed throughout the 33d Aviation Group (Combat), United States Army Reserve (USAR), Fort Rucker, Ala.

■***Army aviation standardization—what is it, and what is your reference?***

◆ **Purpose:** to make sure we all have the same idea as to what the Army aviation standardization program is and how the system operates.

◆ **References:**

• Army Regulation (AR) 5–1, *Army Management Philosophy.*

• AR 34–4, *Army Standardization Policy.*

• AR 95–3, *Aviation: General Provisions, Training, Standardization, and Resource Management.*

• AR 350–41, *Training In Units.*

• AR 385–10, *The Army Safety Program.*

• U.S. Army Forces Command (FORSCOM) Supplement 1 to AR 95–3.

• U.S. Army Aviation Center (USAAVNC) Regulation 95–3, *General Provisions, Training, Standardization, and Resource Management.*

■***What is standardization?***

• AR 34–4, paragraph 3b(2): "**Standardization**. The *management principle** which fosters the development and sustainment of a high state of proficiency and readiness among soldiers and units throughout an organization. *Standardization is accomplished through the universal application of uniform practices and procedures.*"

■***What is the Army management philosophy?***

• AR 5–1, paragraph 1–3b: " The process of acquiring, assigning priorities, allocating and *using resources* (people, money, materiel, facilities, information and time) in an effective and efficient manner." ***Note:*** *One can easily see the connection between crew coordination (cockpit resource management in some circles), standardization, and management philosophy here.*

■***What is the basis of Army standardization?***

• AR 34–4, paragraph 6g: "Approved Army publications such as Army regulations, field manuals [FMs], and technical manuals *are the authorities upon which standardization is based.*"

• AR 350–41, paragraph 5–4a: "Executing training using approved Army publications (field manuals, mission training plans, drills, soldier's manuals, MQS [military qualification standard] manuals, training circulars, training manuals, and technical manuals) *provides the basis for standardization.*"

• AR 95–3, paragraph 4–12a: "The aviation standardization program is designed to ensure a high degree of efficiency in accomplishing the combat mission of the aviation force. This will be achieved by command supervision, employment or [sic] standard aviator tasks, *use of standard publications*, and maintenance of a disciplined pilot force by administration of frequent tests and flight evaluations."

So, standardization is based on the following premises:

✓Units have functional publications accounts.

✓Received publications are posted.

✓ Publications are read and complied with.

■***Who resolves issues that are not clear in the "approved" publications?***

• AR 350–41, paragraph 5–4d: "The proponent schools are the focal points for resolution of standardization issues."

■***At what level should points of contention be addressed?***

• AR 34–4, paragraph 6d: "Standardization will be set up at *the highest possible level* to achieve the greatest benefit without stifling initiative."

■***What is the highest possible level?***

• AR 34–4, paragraph 7c: "At commands brigade size and larger and organizations *that develop policy*, standardization will be implemented through—

(1) Appropriate implementation policies.

(2) Supporting programs.

(3) Standard operating procedures (*SOPs*)."

• AR 95–3, paragraph 4–15: "**Installation and area aviation standardization committees.**

a. **Mission.** Commanders supervise and coordinate the command implementation of the U.S. Army Aviation Standardization Program.

**Italics within quotes throughout the article are the author's emphasis.*

b. **Functions.** Standardization committees will be organized to—

(1) Monitor the proficiency of all assigned or attached aviators in operational aviation positions and other crewmembers specified in ATMs [aircrew training manuals].

(2) Evaluate proficiency of all evaluators, instructors, examiners and trainers.

(3) Coordinate requests for aviation standardization support from assigned or attached units.

(4) *Prepare and review recommended changes to aviation standardization literature and forward to proponents.*

(5) Conduct active assistance and evaluation programs. This includes random flight checks of aviators and spot checks of aviation training and aviation facilities.

(6) Set up provisions for continuing activities on a full–time basis.

(7) Meet at the call of the chairperson.

(8) Funds for travel, per diem, and overtime, if required, will be provided by the member's parent organization."

• FORSCOM Supplement 1 to AR 95–3 lists commands that will maintain standardization committees—among them is the 12lst ARCOM (United States Army Reserve Command), Birmingham, Ala.

In our case, the level we are talking about is the 12lst ARCOM/33d Group level. This is where ambiguity is resolved and policy developed. Paragraph 4.2 of the 33d Aviation Group/12lst ARCOM SOP authorizes standardization councils down to the company/detachment level. These councils should pass questions for clarification to the standardization committee for resolution. (USAAVNC Regulation 95–3 authorizes standardization councils down to battalion level within the Aviation Training Brigade.)

■***Does an opinion of an individual at the U.S. Army Aviation Center Directorate of Evaluation and Standardization (DES) satisfy any requirement to clarify approved publications? Better yet, should a standardization communication (STACOM) be considered regulatory?***

• STACOM #100, 28 Mar 1984: "Although references to and interpretation of DA [Department of the Army] and MACOM–level [major Army command–level) directives and Federal Aviation Regulations appear in STACOM, the publication is informative only and cannot be used as an official source for interpretation of regulation and policies."

However STACOM has been used in some instances to make changes to publications. These changes were official changes to "approved" publications; the STACOM medium was used to expedite the change. If an "approved" publication is not clear or specific, the discrepancy should be brought to the attention of the standardization committee and a DA Form 2028 (*Recommended Changes to Publications and Blank Forms*) submitted. This is the proper method to obtain the desired standardization—not individual interpretation but command guidance.

■***Who must develop SOPs and for what areas?***

• AR 34–4, paragraph 7c: See above quotation in earlier reference.

• AR 34–4, paragraph 7d: "At commands battalion size and smaller and organizations that *carry out policy*, standardization will be implemented through—

(4) The *development of SOPs* and programs which require the uniform application of standardized practices and procedures."

• AR 385–10, paragraph 2–2b: Ensure that practices and procedures that minimize accident risk are incorporated in regulations, directives, *SOPs*, special orders, training plans; and operational plans; and *SOPs* are developed for all operations entailing risk of death, serious injury or property loss."

• AR 385–95, *Army Aviation Accident Prevention*, paragraph 1–6a (4): *An SOP,* covering ALL aspects of the unit's mission, is prepared for all aviation operations within the command."

• FORSCOM Regulation 350–3, paragraph 3–9: "Written training *SOPs are the backbone* of a unit's standardization program."

FMs make liberal mention of SOPs. ATMs include "Unit SOP" as a reference to numerous tasks.

There is no Armywide guidance on how to format an SOP; therefore, the 12lst ARCOM/33d Group SOP provides policy on format and content for all subordinate units.

What all this means is that—

♦Standardization is based on approved publications.

♦Installation and area standardization committees are responsible for reviewing and recommending changes to publications.

♦Unit members should address issues to standardization committees and submit 2028s.

♦Standardization committees should provide guidance on the establishment of standardization councils at subordinate levels.

For more information, contact—

CW5 William S. Turkoski
Standardization Officer
33d Aviation Group (Combat)
Building 25109, Knox AHP
Fort Rucker, AL 36362
DSN 558–2332/2331.

Aviation Life Support Equipment—Who Needs It Anyway?

CW2 Brett L. Carnes
A Company, 5th Battalion, 159th Aviation Regiment
APO AE

B Company, 2–158th Aviation Regiment, 6th Cavalry Brigade (Air Combat), Fort Hood, Tex., was my first assignment fresh out of flight school. However, during that time, I was also temporarily assigned to the 4–228th Aviation Regiment in the Republic of Honduras. The 2–158th Aviation Regiment has a mission supporting the 1st Cavalry Division, the 2d Armored Division, the 6th Cavalry Brigade, Joint Task Force–Six, and other III Corps operations. The 4–228th Aviation Regiment has a very respectable mission, as well, with an operations tempo that a lot of units only dream about. This battalion flies roughly 130 percent more hours than the Department of Army's average for its various types of aircraft. The flying environment is very unforgiving and calls on all aviators/crew members to perform at only the highest levels of proficiency.

Regardless of the setting, the proper care of aviation life support equipment (ALSE) and its proper use is just as vital. It does not matter whether you are flying in the states, over the sands of Somalia, or even over the triple–canopy jungles of Honduras, each aviation/crew member must become intimately familiar with the proper care and use of his or her ALSE. I have developed a fictitious scenario to show the importance of proper care and use of ALSE.

It was a hot, humid afternoon at Anywhere Army Airfield in Central America. The S3 shop had just passed out the weekly missions to the appropriate commanders for execution. Let's say, for example, the Chinook company got a mission to extract some soldiers from a field training exercise (FTX) site out in the middle of nowhere. The pilot in command (PC), along with his crew members, performed his preflight and mission planning for an early morning takeoff for the upcoming Tuesday. Well, Tuesday morning finally rolled around. The crew members met at the aircraft at 0900 hours. The crew had been briefed on the mission, and the takeoff time was met. The crew members performed flawlessly and arrived at the pickup zone right on the money. During the approach and landing to a confined area in the jungle, something happened—something hit the rotor blade causing minor damage. Trying to see what had happened, one of the crew members tripped and cut his leg on something. The PC landed the aircraft

safely, shut down, and assessed the situation. He had already determined that the aircraft should not be flown back to the home station. He also knew that he needed to call someone for assistance. But first, he wanted to take his time and treat the injured crew member because this was only an FTX.

The injured crew member complained of a headache. The PC knew that he had worn this big, bulky survival vest for some reason—so he pulled out his handy–dandy first–aid kit. He noticed the seal had been broken. Then, suddenly, he remembered that he had taken some aspirin out last weekend for his headache. He only had one aspirin left, so he gave it to the injured crew member. *(It sure was a good thing he had brought his own drinking water because his water–purification tablets had expired and, somehow, had been crushed to powder.)* The PC knew he needed to clean the wound with something—so he pulled out the antiseptic pads. He then noticed that the pads were dried out because the packages had holes in them and were out of date. No biggie—the bright PC used what little water he had left to clean the wound. While the injured crew member watched this ongoing fiasco, the PC then pulled out his gauze bandage to wrap the wound. *(Guess what soaked up all of the antiseptic? You guessed it. Is this guy having a bad day or what?)* About an hour had passed, and the minor injury had finally been treated. Then the PC knew that he must contact someone to let them know they were alright. He cranked up the auxiliary power unit and attempted to contact someone with the aircraft radios. Because of the confined location, he was unable to do so. *(In the meantime, a search and rescue (SAR) bird had been launched for the overdue aircraft.)* It was just about dark when, suddenly, the PC heard an approaching helicopter. He pulled out his handy–dandy survival radio. He didn't know exactly how to use it—so he pulled out his operator's manual to figure this "radio thing" out. *(Guess what—the bad day continued. The –10 was out of date, and no changes were posted.)* So, while the SAR bird circled the area looking for some sign, the quick–witted PC whipped out his hand–dandy strobe light. It worked great—for about five flashes. *(The battery went dead.)* He could have pulled out his flares to signal the SAR bird, but he didn't know he had them because he never actually had taken the time to become familiar with the contents of his vest. Luckily, the SAR bird had good weather and plenty of fuel and saw the general location of the last flash of the strobe light. All of the soldiers were rescued, and the Chinook was eventually recovered.

Is this a farfetched story? Yes, maybe. Was there an investigation in my fictitious story? Yes. Were there questions asked about why aviators/crew members were performing flight duties with overdue ALSE? Yes. Did the PC get his orders pulled? Yes. Also, this probably created many difficulties for the command. According to Army Regulation (AR) 95–3, *Aviation: General Provisions, Training, Standardization, and Resource Management*, commanders at all levels will provide proper ALSE **and** related training commensurate with the mission and operational environment. One can easily see not only the regulatory importance of a quality ALSE program, but also the operational importance of quality ALSE.

Who's fault was it that the ALSE was not up to standard? Was it the individual crew member's fault

for not knowing when his ALSE was due an inspection or for not speaking up because he needed or wanted the flight time? Was it the ALSE officer's fault for not telling the aviators/crew members that their ALSE was overdue? Or was it the commander's fault for not having placed enough emphasis on his ALSE program? If you answered "yes" to all of these questions, you are corect.

So who is responsible for ensuring the proper care and use of ALSE and the support for the ALSE program is available? Each individual must know the next inspection due dates on all of his ALSE. That's just part of being a professional aviator/crew member. The PC could, as a technique, ask each crew member when the next inspection is due on his or her ALSE during the crew brief. After all, the PC is the final authority regarding all operations on his aircraft. The ALSE officer is obligated to keep his aviators/crew members informed if their ALSE is overdue or has upcoming inspections. The commander must make sure he has qualified personnel to support an ALSE program. The commander also must emphasize the importance of ALSE by spending the money necessary to maintain the ALSE shop with the needed supplies and the equipment. All leaders—and we are all leaders—must set the example by not performing crew duties with inadequate ALSE or ALSE with overdue inspections.

I challenge all aviators/crew members to place more emphasis on the proper care and use of your ALSE. Who knows? It could save a life one day—and that life could be yours!

ALSE Quiz

How well do you know your ALSE and related topics? Take this short quiz to see where you stand. (Some questions will have more than one answer.)

Questions

1. How can you tell when the next inspection is due on your survival vest?
2. When is the next inspection due on ***your*** survival vest?
3. When is the next inspection due on ***your*** survival radio?
4. What is the normal inspection cycle on your helmet and vest?
5. According to AR 95–3, when are you required to wear life preservers?
6. According to AR 95–3, when are you required to carry over–water survival kits on the aircraft?
7. Who will monitor ***all*** aviation activities for commands to ensure the proper use of protective clothing and ALSE?
8. Lack and misuse of protective clothing and ALSE constitute grounds for an _____ submitted on a Department of the Army (DA) Form _____ according to AR _____.

Answers

1. Look on the Department of Defense (DD) Form 1574–1, *Serviceable Label–Material*, (yellow serviceable tag) in the inside vest pocket.
2. Look on your DD Form 1574–1, or ask your ALSE officer.
3. Look at the DD Form 1574–1 on your radio, or ask your ALSE officer.
4. 120 days.
5. Anytime your aircraft is flown beyond gliding distance of land.
6. Flights made in excess of 30 minutes flying time or 100 nautical miles from the nearest shoreline.
7. Aviation safety officers.
8. Operational Hazard Report (OHR); 2696–R, *Operational Hazard Report*; 385–95, *Army Aviation Accident Prevention*.

Aviation Branch Seeks Female Applicants for Warrant Officer Flight Training

CW5 James R. Kale
Aviation Proponency
U.S. Army Aviation Center
Fort Rucker, Alabama

The U.S. Army Aviation Branch is actively recruiting female applicants for warrant officer flight training (WOFT). Almost all of the aviator military occupational specialties (MOSs) are now open to women; however, very few women have been applying.

If you are interested, consider applying—or pass this information on to anyone else who might be interested. The requirements—outlined in Army Regulation (AR) 611–85, *Selection of Enlisted Volunteers For Training as Aviation Warrant Officers*—in preferred order of completion, are—

■Must not have passed the twenty–ninth birthday the day the selection board meets. Waivers for age are rarely approved.

■Have a high–school diploma or general equivalency diploma (GED) equivalent. However, most applicants selected have one or more years of college credit with above–average grades.

■ Have a minimum general technical (GT) aptitude area score of 110. Most applicants selected have a GT score of 115 or above.

■Obtain moral waivers for any indictments, convictions, or fines for $100 or more. Few applicants are selected if the waiver is for a serious offense after the age of 16.

■Pass the Alternate Flight Aptitude Selection Test (AFAST)—score 90 or above of a possible 165 points. The AFAST is a written aptitude exam to see if you possess the aptitude to learn to fly in a reasonable amount of time. It will help you if you are familiar with the style of questions on the test. For this reason, a study guide has been prepared with sample questions. You may obtain one of these guides from the address at the end of this article. Because the test is timed, you will be better able to pass if you know the type of questions you will be asked. The test comes in two versions. If you don't pass it the first time, you may wait six months and take the second version. If you do pass the test the first time, you may not retake the test to try to improve your score. Only after passing the AFAST should you schedule a Class 1 Flight Physical Examination.

■Pass a Class 1 Flight Physical Exam (requires 20/20 vision without glasses or contacts). If you are not already in the Army, try to get your physical from an Army facility. Other services are not always aware of some specific measurements that are required by the Army for entry into flight school. If you must get your physical from a non–Army facility, have them contact an Army facility to ensure that they get all the information required (outlined in AR 40–501, *Standards of Medical Fitness*).

■Complete an interview with a field–grade aviator (major through colonel). Chief warrant officer 4 (CW4) and CW5 aviators also meet this requirement.

■Apply for the WOFT program. Female applicants have an extremely good selection rate. If you are in the Army, go to the person that would help you apply for any Army school—normally the battalion Personnel and Administration Center (PAC). If you are a civilian or in another service, go to an Army recruiter. Members of the Army may also use a recruiter. You will need a

resume. Take your time, and make it neat. List all applicable civilian and military experience and education. List any honors such as honor graduate from a civilian or military school. Use high–quality paper and a laser printer if one is available. If you are a civilian, write a one–page, hand–written letter explaining why you want to be an Army aviator. You should also submit a typed copy of this hand–written letter. You should include at least three letters of recommendation. Letters from someone who knows you personally and who you have worked for are more valuable than letters from high–ranking or well–known dignitaries who do not know you personally. You will need a full–length photo—make sure it is a sharp one. Your uniform should be in perfect order. If you are a civilian, dress in conservative business clothes or other clothing that is in good taste.

A WOFT application guide covers all the requirements for application and what life is like in flight school and has an AFAST study guide. The guide is available by writing CW5 James R. Kale, Aviation Proponency Office, U. S. Army Aviation Center, ATTN: ATZQ–AP, Fort Rucker, AL 36362–5035; or call commercial (205) 255–2359/2653 or DSN 558–2359/2653. The E–MAIL address is RUC1(KALEJ); the fax number is DSN 558–2639 or commercial (205) 255–2639. For more information, call the numbers listed above or see an Army recruiter.

Aviation Warrant Officer Utility Helicopter Update

CW5 Clifford L. Brown
Aviation Proponency
U.S. Army Aviation Center
Fort Rucker, Alabama

The Aviation Restructure Initiative (ARI) will begin converting units to the new A–series table(s) of organization and equipment (TOE) in fiscal year (FY) 94. Elements of the Warrant Officer Management Act and the Warrant Officer Leader Development Action Plan have been built into these new TOE.

For utility and medical evacuation (MEDEVAC) warrant officers in area of concentration (AOC) 153, career patterns have changed. There are now four aviation warrant officer (AWO) career paths that lead to chief warrant officer 5 (CW5). These career paths are safety, operations, maintenance, and training. These are identified with specific special qualifications identifiers (SQI).

Safety. A warrant officer can unofficially enter this career path as a warrant officer 1 (WO1) or CW2 by performing duties as an assistant safety officer, fire marshall, and ground safety or foreign object damage (FOD) officer at the company level. Official entry into the safety career path occurs as a CW2–promotable (P) or CW3 by completing the Aviation Safety Officer (ASO) Course and being awarded SQI B.

All company–level safety officer positions in utility and MEDEVAC are rank coded for CW3. Upon promotion to CW4, safety officers will be assigned to an attack battalion, command aviation battalion, or cavalry squadron staff as the ASO. Upon promotion to CW5, safety officers will be assigned to a regiment, group, or brigade staff as the ASO. Tables of distribution and allowances (TDA) safety officer positions are also available at the installation, corps, and Army levels. The U.S. Army Safety Center has several positions at the CW5 level as accident investigators.

Operations. A warrant officer can begin this career path as a WO1 or CW2 by becoming the company Aircraft Survivability Equipment/Electronic Warfare (ASE/

EW) Officer. Completing the ASE/EW course generates the award of additional skill identifier (ASI) H3. Receiving the ASI H3 does not require an officer to follow the operations career path; however, tactical operations officers must have a strong background in ASE/EW. Official entry into the operations career path occurs as a CW2(P) or CW3 after completing either one year as an assistant operations officer or after completing the Joint Air Operations Course given at the Eglin Air Force Base (Fla.) Air Ground Operations School and being awarded the SQI I. Company–level tactical operations officer positions are rank coded for CW3s. Upon promotion to CW4, tactical operations officers will be assigned to an attack battalion, command aviation battalion, or cavalry squadron Operations and Training Officer (U.S. Army) (S3) staff as the Tactical Operations/EW Officer. Upon promotion to CW5, Tactical Operations Officers will be assigned to a regiment, group, or brigade S3 staff as the Tactical Operations/EW Officer.

Maintenance. A warrant officer can sometimes begin this career path as a WO1 or CW2 by becoming an assistant maintenance test pilot or by attending the Armament Maintenance Officers Course. Official entry into the maintenance career path occurs as a CW2(P) or CW3 after completing the Maintenance Manager/ Maintenance Test Pilot Course and being awarded SQI G. All company–level aviation maintenance officer positions are rank coded for CW3s. Upon promotion to CW4, aviation maintenance officers will be assigned to an aviation unit maintenance company as the production or quality control officer or to an aviation intermediate maintenance battalion, assault battalion, or command aviation battalion Supply Officer (U.S. Army) (S4) staff as the Aviation Materiel Officer/Maintenance Test Flight Evaluator (MTFE). The new SQI L will be used in coding positions and warrant officers that require MTFE skills. Upon promotion to CW5, aviation maintenance officers will be assigned to a regiment, group, or brigade S4 staff as the Aviation Materiel Officer. Positions also exist in TDA organizations for aviation materiel officers at the installation, corps, and Army levels.

Training. A warrant officer can unofficially enter this career field as a WO1 by performing duties as a unit trainer. Official entry into this career path occurs as a CW2 after completing an instructor pilot course and being awarded SQI C. All company–level instructor pilot positions are being rank coded for CW2s. Upon promotion to CW3 and completing the Instrument Flight Examiners Course, warrant officers will be awarded SQI F. This SQI is coded for CW3s at the company level with a duty–position title of senior instructor pilot. Upon promotion to CW4 and completing local certification procedures, a warrant officer can become a standardization instructor pilot (SIP) and be awarded SQI H. As a CW4, SIPs will be assigned as the company SIP or the assault battalion or command aviation battalion SIP and standardization officer. Upon promotion to CW5, SIPs will be assigned at the regiment, group, or brigade level as the standardization officer. Positions also exist in TDA organizations for SIPs/standardization officers at the installation, corps, and Army levels.

Leader Development. During each successively higher level of rank, warrant officers are required to attend leader development courses. As a CW2(P) or junior CW3, warrant officers must attend the Warrant Officer Advanced Course. Upon selection for CW4, attendance at the Warrant Officer Staff Course is mandatory. Upon selection for CW5, warrant officers must attend the Warrant Officer Senior Staff Course.

Aviation Proponency Office

Readers may address matters concerning aviation personnel to—
Chief, Aviation Proponency Office, ATTN: ATZQ–AP, Fort Rucker, AL 36362–5000; or call DSN 558–2359 or commercial 205–255–2359.

Apache Maintenance Trainer for the Future: AET–A7

CW4 Richard L. Smith
Deputy Chief, Advanced Attack Helicopter Division
and
SFC Daniel Hernandez
Subject Matter Team Lead for AET–A7 Development
Department of Attack Helicopter Training
U.S. Army Aviation Logistics School
Fort Eustis, Virginia

In the not too distant future on a battlefield yet to be determined, the AH–64 Apache troop is preparing for a night cross–forward line of own troops (FLOT) mission into enemy territory. Successful cross–FLOT mission accomplishment will depend not only on the crew's skill and courage but also on the operation of the Apache's weapons and night–vision systems. The pale green images provided by the forward–looking infrared (FLIR) radar systems are necessary for flying the aircraft and acquiring targets in the darkness. During the flight, the crews must depend on the FLIR imagery to avoid collision with the ground and each other, while enabling fast nap–of–the–earth flight to avoid enemy radar and antiaircraft fire. The crews and maintenance personnel must anticipate the dangers of the mission but are comforted by their training and trust in the Apache helicopter's combat–proven systems.

The Apaches are run–up before departure time to verify systems operation. The lead aircraft's fault detection/location system (FDLS) begins to flash a message indicating an aircraft system malfunction. The copilot/gunner must manipulate the data–entry keyboard, querying the fire control computer (FCC) for more target acquisition and designation system (TADS) information. A "TEU [TADS electronic unit] NO GO" message appears on the heads–out display. The TEU is a line replaceable unit (LRU), or black box; its operation is critical for the night–vision systems. SSG Jones, an armament and fire control maintainer, is summoned to troubleshoot the system. Using "read codes" to further query the FCC, SSG Jones determines that another LRU, the TADS power supply (TPS), is the most likely system problem. The TPS is replaced and the FDLS quickly indicates "TADS GO," or no faults. SSG Jones's training and experience have enabled "chalk one" to make the takeoff and lead the troop's Apaches in destroying this night's enemy targets.

The preceding scenario, in which removal of a good component was prevented, is realistic. Apache maintenance experience during Operation Desert Storm and peacetime has revealed that working components are removed at unacceptably high rates. These components are returned from higher maintenance levels with no evidence of failure (NEOF) reported. Reduction of NEOF removals would save money, reduce maintenance time, and increase Apache availability. Improved maintenance training using the AET–A7 is part of the solution.

AH–64A maintenance training will be enhanced in fiscal year (FY) 95 with the delivery of the armament and electrical trainer (AET–A7) to the U.S. Army Aviation Logistics School (USAALS) at Fort Eustis, Va. Instructors will have a device capable not only of teaching maintainer knowledge and skills but also of allowing troubleshooting exercises. The AET–A7 will be used primarily in the Armament Electrical Courses—68X–series

Delivery of the first AET–A7 Apache maintenance trainer is scheduled for FY 95.

military occupational specialties (MOSs)—and for the Armament Maintenance Technician Course—152FE and 151AE. Also, the trainer will have a growth potential for the AH–64A Maintenance Test Pilot Course—152FG.

Under the guidance of the Program Executive Office, Aviation, the Program Manager, Advanced Attack Helicopter, is directing and coordinating the team efforts of Serv–Air, Inc., McDonnell Douglas Training Systems, and Army subject matter experts to produce the best possible trainer within allowable cost constraints. The remanufacture of crash–damaged aircraft (CDA) into sophisticated electrical trainers will have the additional benefit of turning Category B maintenance training aircraft over to the Apache Longbow Modernization Program.

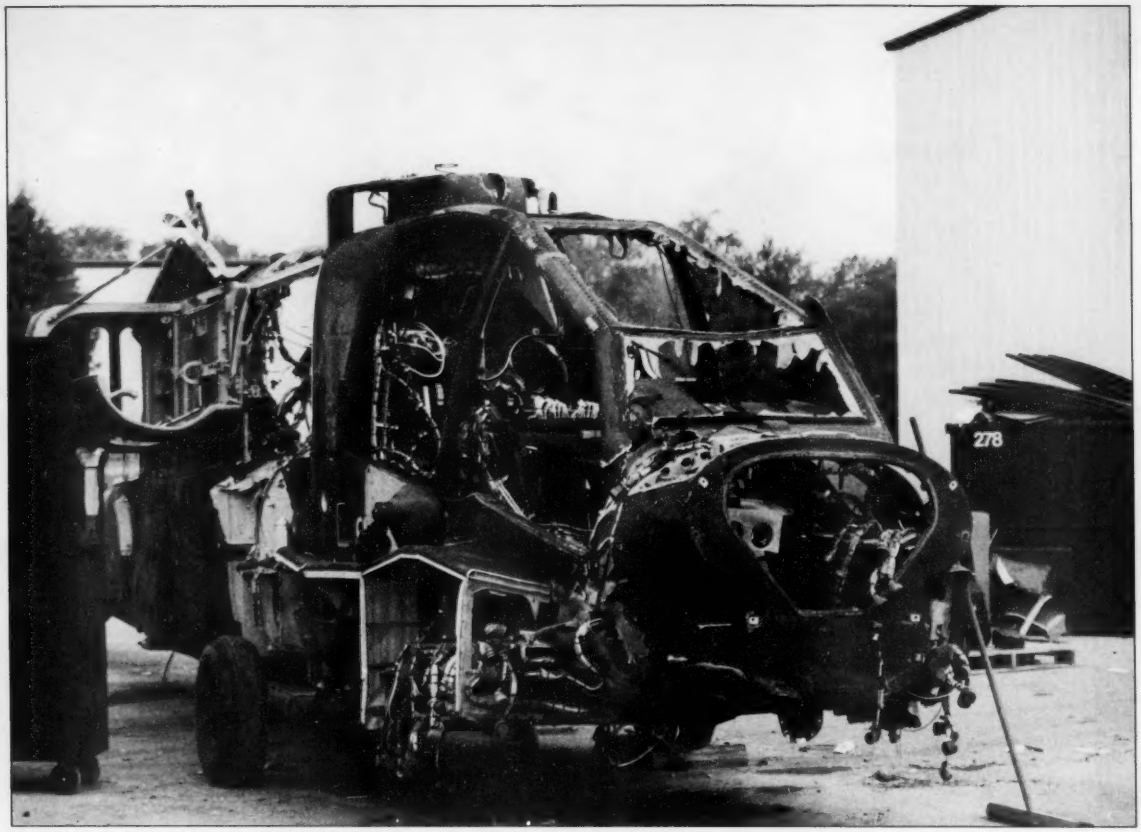
The AET–A7 is a continuation of the concept of using CDA to manufacture more efficient trainers for the Advanced Attack Helicopter Division (AAHD), USAALS. A less sophisticated trainer, the AEDST–A6, has already been delivered for training of the AH–64 helicopter repairer (67R–series MOS). (See the article, *Serving the Army Again, **Aviation Digest,*** March/April 1993, pages 21–23, for information on the design and development of the AEDST–A6.) A similar Army–contractor team concept is being used in the design and development of the AET–A7.

The AET–A7 will be composed of the modified airframe, an instructor operating station (IOS), and a mobile power supply (MPS). The trainer design will consider total aircraft environment—or replication of an actual AH–64A.

The IOS is a computer–driven (concurrent series 7000 or higher) instructor console. The computer is operated on airborne data automation software with an operator interface consisting of a track ball, a keyboard, and four monitors.

Individual monitor displays allow presentation of system schematics, fault menus, visionics displays, and future growth video in a "windows–style" presentation. The instructor will have the option of using a wireless hand–held terminal. An aural and light alarm will alert the instructor to situations requiring shutdown or immediate action.

The MPS will provide required electrical and hydraulic inputs to the trainer's aircraft systems. The MPS will replicate the auxiliary ground power unit (AGPU) as used with the real AH–64A. Applicable switchology for the MPS will have



Crash–damaged aircraft can be remanufactured into sophisticated electrical trainers.

a positive student–knowledge transfer to the AGPU, both in location and function.

Presently, the Apache Training Facility (AAHD) is using composite trainer–A1 and armament fire control and visionics trainer–A5 and Category B aircraft for training. These earlier devices are one of a kind, using mid–1980s technology, and cannot keep up with today's student load or demand for use. Four AET–A7s will provide more device time for each student. The AET–A7 can also be used for armament/visionics component removal and replacement, which is now done on Category B aircraft. Delivery of the first AET–A7 to Fort Eustis, Va., is expected during the first quarter of FY 95.

The AET–A7 will enhance training in integrated systems, both armament and electrical. This will allow training in fault–isolation procedures for malfunctions that involve interfacing of systems. The AET–A7 will meet training objectives in the present program of instruction for the 68X MOSs. The device is being designed to incorporate needs of 68N (X1), avionics training, which is planned for consolidation under the 68X MOS. Also, aircraft wiring/space is being retained in the trainer to accommodate aircraft survivability equipment for future training requirements. This will allow training of MOS–suffix W6 tasks to be taught.

Incorporation of training on these devices in the school's programs of instruction is expected to improve the knowledge and skills of future soldiers in the field. The increased role of training devices during this period of reduced defense expenditures cannot be overstated. The AET–A7 will save Army assets by reducing the cost of maintenance and remanufacturing CDA into a valuable trainer. The AET–A7, as part of the training program, will ensure increased excellence in the training of Army personnel who maintain the world's most sophisticated attack helicopter.

U.S. Army Aviation Logistics School

Readers may address matters about aviation logistics to—Assistant Commandant, U.S. Army Aviation Logistics School, ATTN: ATSQ–LAC, Fort Eustis, VA 23604–5415.

Oklahoma National Guard Provides Antenna Maintenance

Mr. Neal E. Johnson
U.S. Army Air Traffic Control Activity
Fort Rucker, Alabama

When the U.S. Army entered the aviation field, the U.S. Army Communications Command assumed the air traffic control (ATC) mission. This mission included traffic control, on–site navigational aids maintenance, support maintenance, and antenna maintenance. This mission remained intact until 1986, when the ATC transfer plan was executed. All segments of the above mission were delegated to other major commands except for antenna maintenance.

The 7th Signal Command, which owned the antenna teams, continued to provide this service to communications activities. However, because of manpower reductions after October 1986, this service was no longer provided to ATC facilities. Without this service, antennas deteriorated. Some facilities obtained service from local contractors, at extremely high cost, especially for emergency, quick–response service, which was sometimes necessary.

The Area Maintenance and Supply Facility (AMSF) at Fort Rucker, Ala., came in contact, quite by accident, with the 205th Engineering/Installation Squadron of the Oklahoma Air National Guard, Oklahoma City, Okla. This organization provided assistance in the installation of a radar radome at Fort Sill, Okla. This unit has proved its expertise in installing and deinstalling electronic equipment and providing antenna maintenance. This organization has also provided extremely successful service on installed ultra–high–frequency (UHF)/very–high–frequency (VHF) and microwave antennas at Fort Rucker.

Antenna maintenance service is available to all ATC facilities in the continental United States at minimum cost. The only funding normally required is to cover per diem. Transportation is usually by military aircraft. On–post housing is used when available. As many of these squadrons exist around the country, the one closest to the requesting activity will provide the service. Quick–response maintenance may be available on a case–by–case basis.

At least for the present, any organization desiring this service should contact AMSF at Fort Rucker for further coordination. Telephone numbers to call are DSN 558–9078/9718 or commercial 205–255–9078/9718.

Properly used, this service can be the answer to a long–standing shortfall in providing Army aviation with the best communications available.

U.S. Army Air Traffic Control Activity

Readers may address matters concerning air traffic control to — Commander, USAAVNC, ATTN: ATZQ–ATC–MO, Fort Rucker, AL 36362–5265.

Battle Labs Help Develop New Systems

Dr. Henry C. Dubin
Technical Director
Operational Test and Evaluation Command
Fort Hood, Texas

The Operational Test and Evaluation Command (OPTEC) and the United States Army Training and Doctrine Command (TRADOC) are building on a long–standing partnership to optimize test and evaluation support to the acquisition process. In doing so, we combine the program manager's maxim of balancing cost, schedule, and performance with the tester's maxim of maintaining high standards in equipping our soldiers.

The key to achieving a new acquisition system upgrade expeditiously is to get the system right **early**. OPTEC—through its Test and Evaluation Coordination Offices (TECOs), located at the TRADOC schools and battle labs—is teaming up with TRADOC to use early operational testing and experimentation as a tool to help get systems right early.

The first important task is to get the requirement right. For this purpose, Advanced Technology and Concept Demonstrators (ACTDs), using virtual simulations or field surrogates/prototypes, can be exploited by the battle labs to refine requirements. User feedback to the requirements writers is essential because it is ultimately the user who must be satisfied with the new system. OPTEC supports these activities with experiment design, data collection, analysis, and assessment—much as it supports the Concept Evaluation Program and early Force Development Experiments.

The second key challenge is to get the design right. Experiments with reconfigurable simulators in a virtual combat environment and Early User Tests in the field are invaluable tools for getting user feedback (both measurable performance and subjective assessment) to the developers. OPTEC has long served the combat and materiel developers in preparing for Engineering and Manufacturing Development. This type of OPTEC support to TRADOC—and the materiel developers—is more important than ever. Inadequate objective feedback during the design phase of system development can cause false starts in engineering development.

The third key element in getting the system right is ensuring that operational procedures are right. The tactics, techniques, and procedures for a system must be totally compatible with and complement the technical characteristics of that system. The operational test tools best suited for achieving this goal are Force Development Tests and Limited User Tests. These activities provide key indicators that the system is on track to be successful in the initial operational test and evaluation (IOTE), which is a necessary precondition for full fielding.

The final element in getting the system right is ensuring that the system can be supported within planned resources and that operational missions can be sustained. Typically, the reliability, maintainability, and logistics supportability cannot be fully validated until the initial operational test. Therefore, early simulations, which are used to develop concepts of operation, also serve as sources for developing usage rates and mission profiles. These parameters are essential for getting the supportability requirements, maintenance concept, and system design right. Similarly, all field test opportunities should be used to provide feedback to the developers on stressful operating conditions, emerging support procedures, and high–risk components.

To recap, the best way to streamline acquisition is to capitalize on opportunities for early testing and simulation in the battle lab environment to find problems early and get them fixed. When we discover that a system is not right later in the development process, we incur the time and cost of rework in areas such as redesign, rebuild, or retrofit and retest. These costs are avoidable. We must strive to avoid them to the greatest extent possible.

In the OPTEC–TRADOC partnership, OPTEC's expertise

in experimental design, test operations, data reduction and analysis, and evaluations can be applied to support TRADOC's concept and combat development processes. This, in turn, enables the battle labs and combat development activities to concentrate on the substance of establishing new requirements, ensuring that new systems can be fought or operated and providing the institutional training for these systems.

Early operational testing is a valuable tool that enables the Army to accelerate the successful fielding of new systems. A prudent balance of simulation and field tests can provide the facts needed to bring new developments to maturity earlier. The common goal is to equip the force with confidence—our leaders' confidence that we have selected the best possible new capabilities for the least cost and our soldiers' confidence that they have the best warfighting and support systems in the world.

***Note:** Currently, TECOs are located at the following installations: Fort Rucker, Ala.; Fort Benning, Ga.; Fort Knox, Ky.; Fort Lee, Va.; and Fort Leonard Wood, Mo. In addition to the five U.S. Army Test and Experimentation Command (TEXCOM) test directorates located at Fort Hood, Tex., off-site test directorates are located at Fort Huachuca, Ariz.; Fort Bliss, Tex.; and Fort Sill, Okla.*

U.S. Army Test and Experimentation Command

Readers may address matters concerning test and experimentation to—
Headquarters, TEXCOM, ATTN: CSTE–TCS–PAO, Fort Hood, TX 76544–5065.

U.S. Army Class A Aviation Flight Mishaps

Fiscal Year	Number	Flying Hours	Rate	Military Fatalities	Total Cost (in millions)
FY 93 (through 30 April)	19	719,186	2.64	21	86.1
FY 94 (through 30 April)	16	719,186 (estimated)	2.22	6	45.5

Command Sergeant Major Fredy Finch Jr

CH–47D Flight Engineer Instructor Course—Above the Best

SSG Jeffry T. Olson
CH–47 Flight Engineer Instructor Course NCOIC
F Company, 1–14th Aviation Regiment
Fort Rucker, Alabama

It's end–of–course check–ride time for the student flight engineer instructor (FI). Six weeks of training and constant reinforcement, along with the stare of a standardization flight engineer instructor (SI), compel the student to do his very best. The student tries to remember all the terminology and procedures that have been constantly drilled over the past weeks. The student pilot announces that the load is coming under the nose of the aircraft. The student FI is focused on the load and starts calling directions toward the load for hook up.

"Sir, I have the load in sight. I'm going hot mike at this time." This is when the SI is more attentive and looks for any miscues in the student's terminology or actions—hoping there are none, but expecting a few. The student calls out directions, in feet, to the pilot. "Forward 25, down 10. Forward 20, down 5. Left 4, down 2. Sir, hold your position. Loading pole in hand, clevis on loading pole. You are drifting right. Come left 3, hold your left. You are centered over the load, clevis in hand, hook in hand. Load is hooked."

The hardest part now over, the student calls the pilot up until the slings are tight, then calls the load up to a 10–foot hover and is clear for flight. The whole crew sighs in relief—but no one more than the student FI. He knows that he has done well simply by looking at the smile on the face of the SI.

This is a typical scenario for a training flight at the CH–47D Chinook Flight Engineer Instructor Course (FEIC) at Fort Rucker, Ala.

The CH–47D FEIC at the Aviation Warfighting Center is responsible for training qualified active and Reserve–Component flight engineers to be FIs on the CH–47D. The FEIC consists of flight and academic instruction in preflight, in–flight, and tactical flight training tasks, aircraft systems and components, aeromedical factors, night vision goggles (NVG) academics, and the aircrew training program. The course was developed to define, train, and standardize all aspects of the CH–47D Chinook helicopter operations for enlisted crew members, specifically the flight engineer and crew chief at the aviation unit level. Before the FEIC, CH–47 units set up their own crew–member standardization program, and generally, no two CH–47 units' procedures were the same. Crew chiefs received on–the–job training from different flight engineers, resulting in crew duties that varied considerably within the unit.

Before 1986, about 70 percent of all Class A and B aircraft mishaps involving CH–47 aircrew coordination errors were attributed directly or indirectly to enlisted crew members. Also during that time, 14.5 percent of Class A and B aircraft mishaps were directly or indirectly attributed to enlisted crew–member errors. This track record, along with some officers and noncommissioned officers (NCOs) in the CH–47 arena who—with insight and dedication—identified a need for standardization. The first CH–47D Flight Engineer Instructor Course graduated its students on 2 March 1986 and has graduated 312 FIs to date. The FEIC has provided to the field multifunctional instructors capable of performing any mission—as well as instructing those less qualified in both flight and academic subjects.

Since that first graduation in 1986, Class A and B aircraft mishaps attributed to enlisted aircrew coordination errors have dropped to 30 percent. Also, Class A and B aircraft mishaps attributed directly or indirectly to enlisted crew–member errors have dropped to 5.2 percent. The decrease in enlisted crew–member errors is largely attributed to FEIC instructors using aircrew coordination elements to create a crew/team concept, instilling in the students a need to communicate positively, offer assistance, and assert themselves if they are unsure of what is supposed to take place.

The ultimate goal for the FEIC is to standardize all training of crew chiefs, flight engineers, and FIs. In recent months, the course has been streamlined to provide instruction that produces more qualified subject matter experts. The FEIC has proven to be a valuable asset to the U.S. Army and unit commanders worldwide.

The Flight Engineer Instructor Course

Course Length: Six weeks, one day, peacetime; five weeks, one day, mobilization.

Class Size: Eight students maximum; six, minimum.

Certification: Upon graduation, students receive the additional skill identifier (ASI) of N1, aircraft crew member standardization instructor.

Prerequisites:

- ♦Be an Active–duty or a Reserve–Component NCO or a Department of the Army (DA) civilian.
- ♦Hold a rank of sergeant or staff sergeant.
- ♦Be qualified for 67U military occupational specialty (MOS).
- ♦Have a minimum of one year of current experience as a CH–47 flight engineer.
- ♦Have a current flight physical that will not expire during the course.
- ♦Have a current DA Form 759 (*Individual Flight Record and Flight Certificate–Army*).
- ♦Be assigned or on orders to a unit equipped with CH–47Ds.
- ♦Be NVG qualified.

Course Structure:

■*Phase 1*: This phase consists of flight–line academics, and the aircrew training program. It is taught by four instructors from F Company, 1st Battalion, 14th Aviation Regiment, and involves various training aids, in addition to the CH–47 aircraft. Students also begin to develop instruction techniques and practice teaching systems and components on the CH–47—for example, advanced flight control system (AFCS), flight control closet, and utility pressure module. Students are required to instruct on the identification of the component and its function.

■*Phase 2*: This phase involves CH–47 aircraft systems training. It is taught at the CH–47 ground school by DA civilian and enlisted military instructors. Students receive the same aircraft systems training as Aviator Qualification Course (AQC) students, and the FI's experience and knowledge help the AQC pilots to better understand the systems and components. FI students fly with the same AQC pilots during the course, which provides a more crew–coordinated aircraft.

■*Phase 3*: This phase of training involves aeromedical factors and night physiology, taught by the hospital flight–section instructors. NVG academics—to include characteristics, adjustment, and preflight procedures—are also taught during this phase.

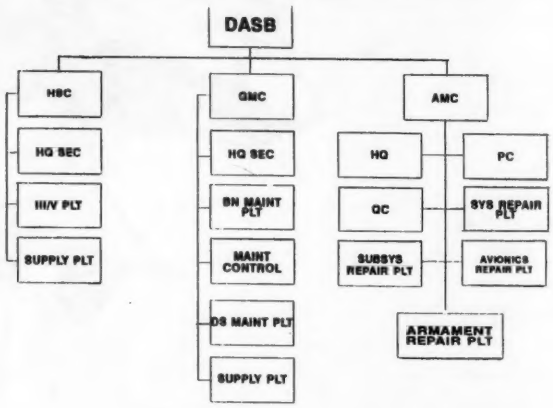
■*Phase 4*: In this phase, students perform preflight training and teach the aircraft systems and components to the instructor—in a role–reversal atmosphere. The students also evaluate and grade each other for 11 flight–training days (28.5 flight hours) to hone their instructor abilities. The instructor grades and debriefs all flight periods to ensure that Army training manual standards and course requirements are met.

■*Phase 5*: In Phase 5, students receive instruction on the development of a training program by planning and performing a military briefing using training aids and conducting numerous method–of–instruction classes before flight training. This final phase makes the FI an invaluable asset to unit commanders as an enlisted standardization training program developer.

The Flight Engineer Instructor Course at Fort Rucker, Ala., trains flight engineers to be CH–47D Chinook flight enginer instructors.

AVIATION RESTRUCTURE INITIATIVE—

Maintaining the Force



Mr. Dennis Davenport
Logistics Management Specialist
U.S. Army Aviation Logistics School
Fort Eustis, Virginia

This is the fourth and final article in a series of articles on the Aviation Restructure Initiative (ARI). The first article "Aviation Restructure Initiative—The Way of the Future," by Lieutenant Colonel Rick Scales, ***Aviation Digest*** September/October 1993 issue, discussed the methodology of ARI development and impacts on the total aviation force structure. The second article, "Aviation Restructure Initiative—The Divisional Aviation Brigade," by Major(P) Jerry K. Hill, ***Aviation Digest*** November/December 1993 issue, discussed the impacts and changes to the divisional aviation brigade. The third article, "Aviation Restructure Initiative—Corps Aviation Brigade and Theater Aviation," by Captain Mike McMahon, ***Aviation Digest*** March/April 1994 issue, discussed the impacts and changes to the corps aviation brigade units and theater aviation units. This article discusses how ARI has affected aviation logistics.

Goals of ARI

The previous articles captured the goals of ARI and its effects on the operational side of aviation, from the aviation brigade to echelons above corps (EAC). As stated in those articles, the goals are to—

- Fix Army of Excellence (AOE) deficiencies.
- Reduce logistics requirements.
- Drive down costs.
- Retire old aircraft.
- Stay within the resources "box."

Aviation will meet these goals by—

- Consolidating low–density aircraft into a single unit within the aviation brigade.
- Creating homogeneous units (units with one type aircraft).
- Replacing aging UH–1 Iroquois and OH–58A/C Kiowa aircraft with modernized aircraft.
- Increasing the number of logistics personnel by resourcing units at 100 percent of the manpower requirements criteria (MARC) and adding assistant crewchiefs for utility aircraft.
- Increasing headquarters personnel requirements to sustain 24–hour–a–day operations.

Current structure

The changes brought about by ARI will give aviation logisticians the opportunity to implement some new concepts; however, before we talk about new concepts, we must understand our current structure and the problems of aviation mainte-

nance inherent in AOE.

The current aviation structure consists of three levels of maintenance: aviation unit maintenance (AVUM), aviation intermediate maintenance (AVIM), and depot maintenance. Each aviation battalion has an organic AVUM capability that performs selected recurring maintenance. That AVUM is backed up by AVIM units in the division, corps, and EAC. The AVIMs are assigned to the support units within their respective levels of command (i.e., division support command (DISCOM), corps support command (COSCOM)), and provide backup AVUM maintenance and AVIM support to the aviation brigade. Depot maintenance is performed by the Corpus Christi Army Depot, TX, either by logistical support teams at the unit location or at the Corpus Christi, TX, location. Depot maintenance includes major overhauls, some component repair, and other tasks requiring more extensive skills, equipment, and facilities than are available at the AVIM level.

Problems of AOE

The problems that AOE created for aviation maintenance include insufficient personnel and equipment to have enough redundancy to perform simultaneous tasks. An additional problem, although not directly attributable to AOE, was the lack of dedicated, multifunctional support to all elements of the aviation brigade. This void created a hollowness in the aviation force, which led to the "passback" maintenance concept. This concept allowed for 25 percent of the divisional AVIM workload to be doctrinally passed back to corps AVIM.

New structure

To Correct these deficiencies, ARI resources a division aviation support battalion (DASB) in each heavy division. The DASB (a subordinate unit of the DISCOM) provides "one stop," dedicated logistical support to the entire aviation brigade. It consists of a headquarters and supply company (HSC), a ground maintenance company (GMC), and an aviation maintenance company (AMC). The HSC provides command and control through the command section, S1, S2/S3, S4, and support operations sections. The supply company has a headquarters section, a Class III/V platoon, and a supply section. It provides Class I, II, III, IV, and VII support to the aviation brigade and operates a Class III/V refuel/rearm point.

The GMC consists of a headquarters section, battalion maintenance section, maintenance control section, cavalry system support team, direct support (DS) maintenance platoon, and a supply platoon. The GMC's mission is to—

- Perform DS maintenance for supported elements in the aviation brigade. This includes repair of communications, engineer, power generation, automotive, quartermaster, chemical, and utilities equipment. It also includes repair of small arms, turrets, and track and wheel vehicles.
- Operate a collocated authorized stockage list (ASL) for both ground and air equipment to support the items stocked in the prescribed load lists (PLLs) of supported units.
- Perform consolidated unit maintenance for all DASB units.
- Provide technical assistance to supported units.
- Provide reinforcing recovery assistance to supported units.
- Provide reparable exchange service and operation of a quick supply store for selected common repair parts.

DASB AMC structure

The DASB AMC structure is very similar to the current AMC structure , the main difference is the absence of an organization supply platoon in the DASB AMC. The company consists of a headquarters, production control section, quality control section, and individual platoons for helicopter systems repair, helicopter subsystems repair, avionics repair, aircraft armament, supply, and service. The company performs the following maintenance functions—

- Structural and airframe repairs.
- Component repair for reinstallation on aircraft or insertion into its reparable exchange (RX) program.
- Scheduled AVIM repairs.
- Reparable exchange service and operation of a quick supply store for selected common repair parts.

The DASB does not have organic aircraft. Aircraft support (to include support for the AMC) will be provided by the general support aviation battalion (GSAB) in the aviation brigade. Currently the DASB is only approved for the heavy division, but studies are in progress to determine DASB applications for light airmobile and airborne divisions.

Benefits of ARI

ARI goes a long way toward fixing the support problems of the aviation brigade. The benefits that will result include an improved maintainer to aircraft ratio, reduction in unit PLL line item requirements, reduction in the number of special test equipment, and the reduction in spare parts required for diagnostic work.

As the aviation community continues to change, aviation logistics will continue to evolve to provide fast, reliable, and dedicated support to the maneuver elements. The Aviation Restructure Initiative has taken the first step to ensure that aviation logistics will always be able to maintain the combat aviation force.

The LTG Ellis D. Parker Aviation Unit Award

A Guide to the Competition

Captain(P) John J. Trankovich Jr
Operations Officer, Doctrine Division
Directorate of Training, Doctrine, and Simulation
U.S. Army Aviation Center
Fort Rucker, Alabama

The competition for the LTG Ellis D. Parker Award is designed to enhance readiness and improve efficiency among aviation units. While there are already several awards available through the Army and the private sector, the Parker Award focuses on the aviation battalion as the primary warfighting aviation force.

The executive officer shouts for the adjutant, and continues cleaning out his in-box. A young captain rounds the corner and slides into the XO's office like it was second base. The executive officer points to the full-color brochure and says, "This year we can win the competition for our category. We have a tremendous chance to win the overall trophy. Find out about how this Parker Award competition is run, and what we have to do. I want to know what's due, when, and where we go next. Get the staff to work on the battalion evaluation packet, and follow the instructions. It's now the middle of June, by the time we close out the annual flying hour program, we should be able to fill in a couple of blanks and print a final copy. By the way—don't scuff up my floor anymore..."

Competition Sequence

The competition centers around the battalion evaluation packet (BEP) prepared at the battalion. A brigade commander (or equivalent) nominates those Aviation battalions whom he considers to be the finest in the categories of combat, combat support, combat service support, or table of distribution and allowances. He may submit more than one entry, but only one per category.

The Aviation brigade commander forwards his nomination to the first general officer in his chain of command.

The general officer evaluates and endorses the best battalion in each category based on the Parker Award criteria, and forwards his selection to the major Army command (MACOM).

The MACOM receives endorsed packets and conducts a similar evaluation. Endorsing the best battalion in each category (for a possible maximum of four), the MACOM forwards its best to Fort Rucker for final evaluation.

In conducting their evaluation, the MACOMs can see and cross-level great ideas for improving other units within their command. As an example, one unit may have "broken the code" on the "cost vs. savings" area for that theater, discovering a cost-effective way to conduct better training. This cross-leveling will improve the quality of Aviation overall, but only if the information is shared.

A Department of the Army (DA)-approved selection board evaluates the BEPs to determine the winner in each category. Then the board re-evaluates only the four category winners to determine the overall winner of the award.

Competition Preparation

The LTG Ellis D. Parker Award is not a creative writing contest. The BEP prepared at the battalion is more of a status report on the last fiscal year than a history lesson or victory speech covering every action, mission, and tasking you've done since your unit was formed in '68.

Your BEP must have a solid foundation in facts, as opposed to emotions. There is room for the subjective opinion, but focus on objective quantitative and qualitative data verified by the chain of command to tell your story. The selection board questions and researches anything that might be "out of trim..."

Play by the rules. Last year a unit attempted to side-step the two-page limit on data by reducing the size (pitch) of type used to prepare the data. Smaller type allows more data on two pages. This demonstrated creative staff work, but a procedural error. The eight topics of mission statement, commander's intent, leadership, training, maintenance, safety, cost vs. savings, and innovations are limited to a two-page narrative. With that established, the maximum size of TAB B is, therefore, 16 pages. This does not prevent enclosures to the specific areas of data! Enclosures do not count against the 16-page limit. If you want to fill your three-ring binder with enclosures, help yourself.

Another procedural error is the size of the three-ring binder or notebook. A 1-inch binder is interpreted as a book that has retaining rings no larger than 1 inch in diameter, without regard to the thickness of the cover. Last year, the board received BEPs in a 2-inch, and even a 3-inch binder.

Appearance of the packet is important, but don't get carried away. Last year a unit acquired a leather notebook, and had a brass plate affixed to the front cover with the unit designation. It was absolutely beautiful to look at, and every board member commented on the appearance of the notebook. The unit, however, was defeated by substantive data presented by the category winner.

One of last year's other category winners submitted their BEP in a black standard-issue Army notebook. That winning standard notebook was packed with facts, and high-quality data, clearly superior to all others in its category.

On a topic related to the leather notebook, many staff officers in our com-

puterized Army have been taught that "a little cheese spreads a long way." Perhaps this is so, but too much of a good thing can spoil the end product. Many of last year's packets had an overwhelming amount of graphics and high-technology eye–catching "fluff" that actually detracted from the quality of the packet. Tell your story, illustrate as required, but don't get carried away in color fading and embedded scan–art when a simple black and white chart will suffice. Don't rule out color, just use it effectively.

Ensuring that the proper endorsements or cover letters are prepared and included becomes a problem only for units that attempt to shortcut the competition process, and forward their packet directly to Fort Rucker. If the selection board receives multiple entries in a category from a MACOM, the BEP without the proper endorsement is easily identified. The MACOM is contacted for clarification about which unit is, in fact, the approved entry. The decision cycle becomes rather brief and unemotional at that point.

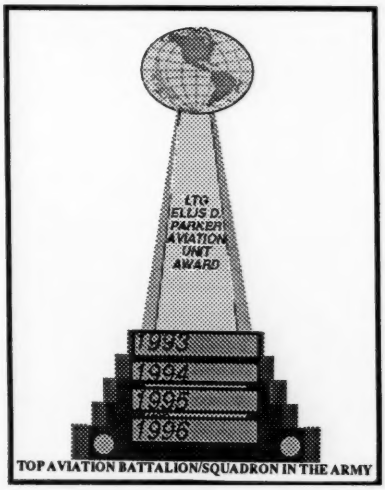
The Selection Board

The composition of the board covers the spectrum of Army aviation. Its composition and membership is approved by the Commanding General, United States Army Aviation Center and Fort Rucker. The selection board consists of active duty, Army Reserve, National Guard, commissioned, warrant, and senior noncommissioned officers.

When the board is convened, the members are exempted from all other duties, just as if they had gone TDY to participate in a promotion/retention board. The board is briefed on their duties and rules of engagement. The evaluation process begins when the president of the board so directs.

Every member of the board evaluates all of the entries in a category, and submits a scoresheet. Points are tabulated and verified, and the winner of the category is identified only to the president of the board. The board members initially evaluate only the BEP's in the same category, and one category at a time, so that BEPs from the table of distribution and allowances and combat category are not compared to each other in the early judging.

Category–winning BEPs are each revoted against the other category winners, and scored again by every member of the board. To stretch an analogy, the "best of breed" competes again for "best of show." Some would equate this process to a comparison of apples and oranges. When the data from the category winners are on the same table, the accomplishments in the different missions of Army aviation are clear, and the "playing field" becomes level.



TOP AVIATION BATTALION/SQUADRON IN THE ARMY

When the outstanding aviation unit is selected, the list is prepared and taken to the commanding general for certification. The decisions of the board are final.

The board proceedings and the names of the members of the board are secret until the names of the winning units are released. It accomplishes nothing to call Fort Rucker to check on the status of the competition until the trophies have been presented. Once the competition is over, the BEPs and board documents are secured and archived by the Adjutant General's office at Fort Rucker.

The Award

The awards ceremony takes place at Fort Rucker on the first day of the Aviation Brigade Commanders Conference in early December. The brigade commander will be notified that the XYZ battalion of his unit will receive an award at the ceremony, and to bring the commander and command sergeant major (a representative from a higher echelon may receive the award in place of the unit if the situation requires). Fort Rucker will provide funding data for travel.

Battalions need to begin compiling the data they will need to quantify in their BEP. At the close of the fiscal year, the unit should be able to total out its flight hours, safety record, dollars saved, make a few edits to a couple of charts, and proceed down the path toward Fort Rucker. MACOMs need to receive, judge, endorse, and forward their nominations from installations and separate brigades between the end of the flying hour year and the fiscal year, to the 1st of November (the deadline for BEP arrival at Fort Rucker from MACOMs), and it is only a short time. Brigades and installations must be prepared to execute the local selection/endorsement process.

Last year's full–color flyer describes the BEP format. This year the format will not change. Units can expect message traffic outlining this year's program, and future incorporation of the Parker Award in DA awards publications soon.

The process works. Outstanding Aviation units receive recognition, and by cross–leveling good ideas, all of Army aviation benefits in readiness and efficiency.

During the last week in November, as the Aviation Brigade Commanders Conference is about to kick off at Fort Rucker, the executive officer shouts for the adjutant. The young captain walks quickly around the corner and tenderly steps into the XO's office, taking care not to scuff the wax on the office floor.

"The brigade commander wants our battalion commander and the command sergeant major to accompany him to Fort Rucker for the first day of the conference. Our battalion is one of four Army–wide to win in category. Tuesday they'll present the winner's trophy for the LTC Ellis D. Parker Award for Excellence in Army Aviation. I'm not sure how we did, but the brigade commander hasn't quit grinning in 2 days. Prepare the TDY orders; call this number at Fort Rucker for funding data."

"Tell me there, adjutant, what do you think about those new floor buffers?"

photo by SSG Efrain Gonzalez

photo by SSG Theodore J. Koniares

See Pages 6-9

PIN:072685–000